

#4

SEQUENCE LISTING

<110> Kleanthous, Harold
Al-Garawi, Amal
Miller, Charles
Tomb, Jean Francois
Oomen, Raymond P.

<120> Identification of Polynucleotides
Encoding Novel Helicobacter Polypeptides in the Helicobacter
Genome

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<141> 2001-06-29

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Lys Asp Ser Pro Cys Ile Phe Cys Trp Ala Gln Arg Ile Asn Met Ile																
35 40 45 50																
tta ata ggg gct gtg gcg ctt ttg gtg gtg cgt ttt ggg ttt aag cct																248
Leu Ile Gly Ala Val Ala Leu Leu Val Val Arg Phe Gly Phe Lys Pro																
55 60 65																
aaa tac att gcc ttg ctg ttg ctt atg gct agt agc ggg tta tat gag																296
Lys Tyr Ile Ala Leu Leu Leu Leu Met Ala Ser Ser Gly Leu Tyr Glu																
70 75 80																
agc ttt tat cat acc ggt agc cat gct tta gaa gat gtg ggg cag gga																344
Ser Phe Tyr His Thr Gly Ser His Ala Leu Glu Asp Val Gly Gln Gly																
85 90 95																
ttc gcg ctc gct att ttg ggc ttg cac acg cag ttt tgg gcg ctt ttt																392
Phe Ala Leu Ala Ile Leu Gly Leu His Thr Gln Phe Trp Ala Leu Phe																
100 105 110																
gtc ttt ttt agc gtg gtg gtg ctt tta gcg gtt ttg ctc ttt ttt gcc																440
Val Phe Phe Ser Val Val Val Leu Leu Ala Val Leu Leu Phe Phe Ala																
115 120 125 130																
cct aat gcc caa cct ttc aaa gat cat tcg tta aac gcg ctc caa aaa																488
Pro Asn Ala Gln Pro Phe Lys Asp His Ser Leu Asn Ala Leu Gln Lys																
135 140 145																
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Ile Ala Phe Tyr Val Phe Phe Met Val Val Gly Ser Asn Ala Val Gln																
150 155 160																

gcg ttt att tct acc ggg cct ttc cct tac ata ggg caa agc gat ccg	584
Ala Phe Ile Ser Thr Gly Pro Phe Pro Tyr Ile Gly Gln Ser Asp Pro	
165 170 175	
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Val Arg Phe Ser Trp Asn Leu Lys Glu Ser Val Trp Ser Met Glu Asn	
180 185 190	
tgg gat cat ttg aaa ttc cca aga agc gtt ttg ggc aga agg gat gtg	680
Trp Asp His Leu Lys Phe Pro Arg Ser Val Leu Gly Arg Arg Asp Val	
195 200 205 210	
ggc gag cct ttg aaa ttg agc gct ttg cct aaa gat aac gat tat gag	728
Gly Glu Pro Leu Lys Leu Ser Ala Leu Pro Lys Asp Asn Asp Tyr Glu	
215 220 225	
cgt tct cct tta gaa att aca aaa act cta aag att gga aaa aaa gaa	776
Arg Ser Pro Leu Glu Ile Thr Lys Thr Leu Lys Ile Gly Lys Lys Glu	
230 235 240	
gag ctt ttt tta aaa ttg aat gga gcg atc acg gat ttg agt ttc aat	824
Glu Leu Phe Leu Lys Leu Asn Gly Ala Ile Thr Asp Leu Ser Phe Asn	
245 250 255	
gaa gac aag gcg att ctt acc aca gaa aac caa ggg ctt tat ctt gta	872
Glu Asp Lys Ala Ile Leu Thr Thr Glu Asn Gln Gly Leu Tyr Leu Val	
260 265 270	
agt aac gat ttg aaa acc att cat agc cat atg gtg ttg gat agc tat	920
Ser Asn Asp Leu Lys Thr Ile His Ser His Met Val Leu Asp Ser Tyr	
275 280 285 290	
tat agc gcg acg gtg ggg tct ttc gtg ggg gcg gat ttc aac gaa gat	968
Tyr Ser Ala Thr Val Gly Ser Phe Val Gly Ala Asp Phe Asn Glu Asp	
295 300 305	
gaa aac att gtg atc atg ggc aat aat aaa acg agc gtg gaa atc act	1016
Glu Asn Ile Val Ile Met Gly Asn Asn Lys Thr Ser Val Glu Ile Thr	
310 315 320	
cct aac aaa aac gct aac atg ctt aaa aac ttc cct tat ttt tta gaa	1064
Pro Asn Lys Asn Ala Asn Met Leu Lys Asn Phe Pro Tyr Phe Leu Glu	
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ggg gtc aac tct ttt gac gaa gtg gaa cgc agc cgc ttg aaa act tct	1112
Gly Val Asn Ser Phe Asp Glu Val Glu Arg Ser Arg Leu Lys Thr Ser	
340 345 350	
agg gcg aaa aac tat tat gtt agc gtt gca aga aga ggg gct aaa ttc	1160
Arg Ala Lys Asn Tyr Tyr Val Ser Val Ala Arg Arg Gly Ala Lys Phe	
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act tat ttg atc agc gct cct aac aag cgt tat aag gat ttg att att	1208
Thr Tyr Leu Ile Ser Ala Pro Asn Lys Arg Tyr Lys Asp Leu Ile Ile	
375 380 385	

att tcc atg cgt aat agc gat aaa cag gtg cat ggg gag ttt tta ctg 1256
 Ile Ser Met Arg Asn Ser Asp Lys Gln Val His Gly Glu Phe Leu Leu
 390 395 400

gaa tta ggc aat gcc aaa ctt aaa gaa aaa agg gga ttg ggc gag tta 1304
 Glu Leu Gly Asn Ala Lys Leu Lys Glu Lys Arg Gly Leu Gly Glu Leu
 405 410 415

gtc att agc act ttg gct tta aag gat aat aaa ctt tat gcg ttc agt 1352
 Val Ile Ser Thr Leu Ala Leu Lys Asp Asn Lys Leu Tyr Ala Phe Ser
 420 425 430

aag gaa ttt aac acg ctt tta gtc ata gac cct aca aaa gaa gag att 1400
 Lys Glu Phe Asn Thr Leu Leu Val Ile Asp Pro Thr Lys Glu Glu Ile
 435 440 445 450

ctt gaa gtt tat ggc ttg cct aaa gag att aaa aat atc agt gct gga 1448
 Leu Glu Val Tyr Gly Leu Pro Lys Glu Ile Lys Asn Ile Ser Ala Gly
 455 460 465

ggg ttt aga aac gat gag ctt gtc ctt gtg agc tat gag aat aat aaa 1496
 Gly Phe Arg Asn Asp Glu Leu Val Leu Val Ser Tyr Glu Asn Asn Lys
 470 475 480

aat att ctc tac acc ctt aat ttt taaactcttt taaagctact tttttctaatt 1550
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 485 490

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 Val Leu Lys Asp Ser Pro Cys Ile Phe Cys Trp Ala Gln Arg Ile Asn
 35 40 45
 Met Ile Leu Ile Gly Ala Val Ala Leu Leu Val Val Arg Phe Gly Phe
 50 55 60
 Lys Pro Lys Tyr Ile Ala Leu Leu Leu Met Ala Ser Ser Gly Leu
 65 70 75 80
 Tyr Glu Ser Phe Tyr His Thr Gly Ser His Ala Leu Glu Asp Val Gly
 85 90 95
 Gln Gly Phe Ala Leu Ala Ile Leu Gly Leu His Thr Gln Phe Trp Ala
 100 105 110
 Leu Phe Val Phe Phe Ser Val Val Val Leu Leu Ala Val Leu Leu Phe
 115 120 125
 Phe Ala Pro Asn Ala Gln Pro Phe Lys Asp His Ser Leu Asn Ala Leu
 130 135 140

Gln	Lys	Ile	Ala	Phe	Tyr	Val	Phe	Phe	Met	Val	Val	Gly	Ser	Asn	Ala	145	150	155	160
Val	Gln	Ala	Phe	Ile	Ser	Thr	Gly	Pro	Phe	Pro	Tyr	Ile	Gly	Gln	Ser	165	170	175	
Asp	Pro	Val	Arg	Phe	Ser	Trp	Asn	Leu	Lys	Glu	Ser	Val	Trp	Ser	Met	180	185	190	
Glu	Asn	Trp	Asp	His	Leu	Lys	Phe	Pro	Arg	Ser	Val	Leu	Gly	Arg	Arg	195	200	205	
Asp	Val	Gly	Glu	Pro	Leu	Lys	Leu	Ser	Ala	Leu	Pro	Lys	Asp	Asn	Asp	210	215	220	
Tyr	Glu	Arg	Ser	Pro	Leu	Glu	Ile	Thr	Lys	Thr	Leu	Lys	Ile	Gly	Lys	225	230	235	240
Lys	Glu	Glu	Leu	Phe	Leu	Lys	Leu	Asn	Gly	Ala	Ile	Thr	Asp	Leu	Ser	245	250	255	
Phe	Asn	Glu	Asp	Lys	Ala	Ile	Leu	Thr	Thr	Glu	Asn	Gln	Gly	Leu	Tyr	260	265	270	
Leu	Val	Ser	Asn	Asp	Leu	Lys	Thr	Ile	His	Ser	His	Met	Val	Leu	Asp	275	280	285	
Ser	Tyr	Tyr	Ser	Ala	Thr	Val	Gly	Ser	Phe	Val	Gly	Ala	Asp	Phe	Asn	290	295	300	
Glu	Asp	Glu	Asn	Ile	Val	Ile	Met	Gly	Asn	Asn	Lys	Thr	Ser	Val	Glu	305	310	315	320
Ile	Thr	Pro	Asn	Lys	Asn	Ala	Asn	Met	Leu	Lys	Asn	Phe	Pro	Tyr	Phe	325	330	335	
Leu	Glu	Gly	Val	Asn	Ser	Phe	Asp	Glu	Val	Glu	Arg	Ser	Arg	Leu	Lys	340	345	350	
Thr	Ser	Arg	Ala	Lys	Asn	Tyr	Tyr	Val	Ser	Val	Ala	Arg	Arg	Gly	Ala	355	360	365	
Lys	Phe	Thr	Tyr	Leu	Ile	Ser	Ala	Pro	Asn	Lys	Arg	Tyr	Lys	Asp	Leu	370	375	380	
Ile	Ile	Ile	Ser	Met	Arg	Asn	Ser	Asp	Lys	Gln	Val	His	Gly	Glu	Phe	385	390	395	400
Leu	Leu	Glu	Leu	Gly	Asn	Ala	Lys	Leu	Lys	Glu	Lys	Arg	Gly	Leu	Gly	405	410	415	
Glu	Leu	Val	Ile	Ser	Thr	Leu	Ala	Leu	Lys	Asp	Asn	Lys	Leu	Tyr	Ala	420	425	430	
Phe	Ser	Lys	Glu	Phe	Asn	Thr	Leu	Leu	Val	Ile	Asp	Pro	Thr	Lys	Glu	435	440	445	
Glu	Ile	Leu	Glu	Val	Tyr	Gly	Leu	Pro	Lys	Glu	Ile	Lys	Asn	Ile	Ser	450	455	460	
Ala	Gly	Gly	Phe	Arg	Asn	Asp	Glu	Leu	Val	Leu	Val	Ser	Tyr	Glu	Asn	465	470	475	480
Asn	Lys	Asn	Ile	Leu	Tyr	Thr	Leu	Asn	Phe							485	490		

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Glu Lys Ser Phe Leu Lys Ser Lys Gln Leu Phe Leu Cys Gly Leu Gly	
5 10 15	
gtt ttg atg ctg cag gct tgc act tgc cca aac act tca caa agg aat	152
Val Leu Met Leu Gln Ala Cys Thr Cys Pro Asn Thr Ser Gln Arg Asn	
20 25 30	
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Ser Phe Leu Gln Asp Val Pro Tyr Trp Met Leu Gln Asn Arg Ser Glu	
35 40 45 50	
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Tyr Ile Thr Gln Gly Val Asp Ser Ser His Ile Val Asp Gly Lys Lys	
55 60 65	
act gaa gag ata gaa aaa atc gct acc aaa aga gcg aca ata aga gtg	296
Thr Glu Glu Ile Glu Lys Ile Ala Thr Lys Arg Ala Thr Ile Arg Val	
70 75 80	
gca caa aat att gtg cat aaa ctt aaa gaa gct tac ctt tcc aaa acc	344
Ala Gln Asn Ile Val His Lys Leu Lys Glu Ala Tyr Leu Ser Lys Thr	
85 90 95	
aat cgc atc aag caa aag atc act aat gaa atg ttt atc caa atg aca	392
Asn Arg Ile Lys Gln Lys Ile Thr Asn Glu Met Phe Ile Gln Met Thr	
100 105 110	
cag ccc att tat gac agc ttg atg aat gtg gat cgt tta ggg att tat	440
Gln Pro Ile Tyr Asp Ser Leu Met Asn Val Asp Arg Leu Gly Ile Tyr	
115 120 125 130	
atc aat cct aac aat gag gaa gtg ttt gcg tta gtg cgc gcg cgt ggt	488
Ile Asn Pro Asn Asn Glu Glu Val Phe Ala Leu Val Arg Ala Arg Gly	
135 140 145	
ttt gat aag gac gct ttg agc gaa ggg ttg cat aaa atg tcc tta gac	536
Phe Asp Lys Asp Ala Leu Ser Glu Gly Leu His Lys Met Ser Leu Asp	
150 155 160	
aat caa gcg gtg agt atc ctt gtg gct aaa gtg gaa gaa atc ttt aaa	584
Asn Gln Ala Val Ser Ile Leu Val Ala Lys Val Glu Glu Ile Phe Lys	
165 170 175	
gat tct gtc aat tac gga gat gtt aaa gtc cct ata gcc atg	626
Asp Ser Val Asn Tyr Gly Asp Val Lys Val Pro Ile Ala Met	
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 Arg Asn Ser Phe Leu Gln Asp Val Pro Tyr Trp Met Leu Gln Asn Arg
 35 40 45
 Ser Glu Tyr Ile Thr Gln Gly Val Asp Ser Ser His Ile Val Asp Gly
 50 55 60
 Lys Lys Thr Glu Glu Ile Glu Lys Ile Ala Thr Lys Arg Ala Thr Ile
 65 70 75 80
 Arg Val Ala Gln Asn Ile Val His Lys Leu Lys Glu Ala Tyr Leu Ser
 85 90 95
 Lys Thr Asn Arg Ile Lys Gln Lys Ile Thr Asn Glu Met Phe Ile Gln
 100 105 110
 Met Thr Gln Pro Ile Tyr Asp Ser Leu Met Asn Val Asp Arg Leu Gly
 115 120 125
 Ile Tyr Ile Asn Pro Asn Asn Glu Glu Val Phe Ala Leu Val Arg Ala
 130 135 140
 Arg Gly Phe Asp Lys Asp Ala Leu Ser Glu Gly Leu His Lys Met Ser
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 Phe Lys Asp Ser Val Asn Tyr Gly Asp Val Lys Val Pro Ile Ala Met
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 Lys Thr Ala Ile Asn Arg Pro Ile Thr Thr Leu Met Phe Ala Leu Ala
 5 10 15
 att gtc ttt ttt ggg act atg ggg ttt aaa aaa ttg agc gtg gcg ctt 152
 Ile Val Phe Phe Gly Thr Met Gly Phe Lys Lys Leu Ser Val Ala Leu
 20 25 30
 ttc cct aaa att gat ttg cct acg gtg gtg gtt act acg act tat cct 200

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Gly	Ala	Ser	Ala	Glu	Ile	Ile	Glu	Ser	Lys	Val	Thr	Asp	Lys	Ile	Glu	
				55					60					65		
gaa	gcg	gtg	atg	ggg	att	gat	ggg	atc	aaa	aag	gtt	act	tcc	acg	agt	296
Glu	Ala	Val	Met	Gly	Ile	Asp	Gly	Ile	Lys	Lys	Val	Thr	Ser	Thr	Ser	
			70					75					80			
tct	aaa	aat	gtg	agt	atc	gtc	gtc	att	gaa	ttt	gag	tta	gaa	aaa	cct	344
Ser	Lys	Asn	Val	Ser	Ile	Val	Val	Ile	Glu	Phe	Glu	Leu	Glu	Lys	Pro	
		85					90					95				
aat	gaa	gaa	gcc	tta	aac	gat	gtg	gtg	aat	aaa	att	tct	tcg	gtg	cgt	392
Asn	Glu	Glu	Ala	Leu	Asn	Asp	Val	Val	Asn	Lys	Ile	Ser	Ser	Val	Arg	
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Phe	Asp	Asp	Ser	Asn	Ile	Lys	Lys	Pro	Ser	Ile	Asn	Lys	Phe	Asp	Thr	
115					120					125					130	
gac	agc	caa	gcc	att	att	tca	ttg	ttt	gtg	agc	agt	tca	agc	gtg	ccg	488
Asp	Ser	Gln	Ala	Ile	Ile	Ser	Leu	Phe	Val	Ser	Ser	Ser	Ser	Val	Pro	
				135					140					145		
gct	aca	acc	ctt	aat	gac	tac	gct	aaa	aac	acc	atc	aaa	ccc	atg	ctc	536
Ala	Thr	Thr	Leu	Asn	Asp	Tyr	Ala	Lys	Asn	Thr	Ile	Lys	Pro	Met	Leu	
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caa	aaa	atc	aat	ggg	gta	ggg	ggc	gtg	cag	ctc	aac	ggc	ttt	agg	gag	584
Gln	Lys	Ile	Asn	Gly	Val	Gly	Gly	Val	Gln	Leu	Asn	Gly	Phe	Arg	Glu	
		165					170					175				
cgc	cag	att	agg	att	tat	gca	aat	ccc	act	ttg	atg	aat	aaa	tac	aac	632
Arg	Gln	Ile	Arg	Ile	Tyr	Ala	Asn	Pro	Thr	Leu	Met	Asn	Lys	Tyr	Asn	
	180					185					190					
ctg	act	tat	gcg	gat	ctt	ttc	agc	acg	ctt	aaa	gcg	gag	aat	gtg	gaa	680
Leu	Thr	Tyr	Ala	Asp	Leu	Phe	Ser	Thr	Leu	Lys	Ala	Glu	Asn	Val	Glu	
195					200					205					210	
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Ile	Asp	Gly	Gly	Arg	Ile	Val	Asn	Ser	Gln	Arg	Glu	Phe	Ser	Ile	Leu	
				215					220					225		
atc	aat	gcg	aat	agt	tat	agc	gtt	gcg	gat	gtg	gaa	aag	att	caa	gtg	776
Ile	Asn	Ala	Asn	Ser	Tyr	Ser	Val	Ala	Asp	Val	Glu	Lys	Ile	Gln	Val	
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ggt	aat	cat	gtg	cgt	ctt	ggc	gat	att	gca	aaa	att	gaa	atc	ggt	ttg	824
Gly	Asn	His	Val	Arg	Leu	Gly	Asp	Ile	Ala	Lys	Ile	Glu	Ile	Gly	Leu	
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Glu Glu Asp Asn Thr Phe Ala Ser Phe Lys Asp Lys Pro Gly Val Ile	
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Leu Glu Ile Gln Lys Ile Ala Gly Ala Asn Glu Ile Glu Ile Val Asp	
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agg gtg tat gaa gct tta aag cgc att caa gcc att agc cct aac tat	968
Arg Val Tyr Glu Ala Leu Lys Arg Ile Gln Ala Ile Ser Pro Asn Tyr	
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Glu Ile Arg Pro Phe Leu Asp Thr Thr Gly Tyr Ile Arg Thr Ser Ile	
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Val Val Phe Ala Phe Leu Arg Asn Gly Thr Ile Thr Leu Val Ser Ala	
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Met Gly Phe Ser Leu Asn Met Leu Thr Met Val Ala Leu Thr Leu Ala	
375 380 385	
ata ggg att atc att gat gat gcg atc gtg gtg att gaa aac atc cat	1256
Ile Gly Ile Ile Ile Asp Asp Ala Ile Val Val Ile Glu Asn Ile His	
390 395 400	
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Lys Lys Leu Glu Met Gly Met Ser Lys Arg Lys Ala Ser Tyr Glu Gly	
405 410 415	
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Val Arg Glu Ile Gly Phe Ala Leu Val Ala Ile Ser Ala Met Leu Leu	
420 425 430	
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Ser Val Phe Val Pro Ile Gly Asn Met Lys Gly Ile Ile Gly Arg Phe	
435 440 445 450	
ttt caa agt ttt ggg atc acg gtg gct tta gcg atc gct cta tcg tat	1448
Phe Gln Ser Phe Gly Ile Thr Val Ala Leu Ala Ile Ala Leu Ser Tyr	
455 460 465	
gtg gtg gtc gtt acg att atc ccc atg gta agc tca gtc gtg gtc aat	1496
Val Val Val Val Thr Ile Ile Pro Met Val Ser Ser Val Val Val Asn	
470 475 480	

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Pro Arg His Ser Arg Phe Tyr Val Trp Ser Glu Pro Phe Phe Lys Ala	
485 490 495	
tta gag tct cgt tat acc aag ttg ctc caa tgg gta tta aac cac aag	1592
Leu Glu Ser Arg Tyr Thr Lys Leu Leu Gln Trp Val Leu Asn His Lys	
500 505 510	
atc att atc tct ata gcg gtg gtt ttg gtg ttt gtg gga tcg ctt ttt	1640
Ile Ile Ile Ser Ile Ala Val Val Leu Val Phe Val Gly Ser Leu Phe	
515 520 525 530	
gtg gct tct aag att ggt atg gag ttc atg ctg aaa gaa gat agg ggg	1688
Val Ala Ser Lys Ile Gly Met Glu Phe Met Leu Lys Glu Asp Arg Gly	
535 540 545	
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Arg Phe Leu Val Trp Leu Lys Ala Lys Pro Gly Val Ser Ile Asp Tyr	
550 555 560	
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Met Thr Gln Lys Ser Lys Ile Phe Gln Lys Ala Ile Glu Lys His Ala	
565 570 575	
gaa gtg gaa ttc acc acc ttg caa gtg ggt tat ggc acc aca caa aac	1832
Glu Val Glu Phe Thr Thr Leu Gln Val Gly Tyr Gly Thr Thr Gln Asn	
580 585 590	
cct ttt aag gct aag att ttt gtg caa ctc aag cct tta aaa gag cgt	1880
Pro Phe Lys Ala Lys Ile Phe Val Gln Leu Lys Pro Leu Lys Glu Arg	
595 600 605 610	
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Lys Lys Glu His Gln Leu Gly Gln Phe Glu Leu Met Ser Val Leu Arg	
615 620 625	
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Lys Glu Leu Arg Ser Leu Pro Glu Ala Lys Gly Leu Asp Thr Ile Asn	
630 635 640	
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645 650 655	
caa acc ttt gtg ttt tcc cat tct caa gaa gcg gtg gat aaa agc gtg	2072
Gln Thr Phe Val Phe Ser His Ser Gln Glu Ala Val Asp Lys Ser Val	
660 665 670	
gag aat ttg aaa aaa ttc tta tta gaa agc cct gaa tta aaa ggc aag	2120
Glu Asn Leu Lys Lys Phe Leu Leu Glu Ser Pro Glu Leu Lys Gly Lys	
675 680 685 690	
ggt gaa agc tat cat aca agc acg agc gaa tcg caa ccg caa ttg caa	2168
Val Glu Ser Tyr His Thr Ser Thr Ser Glu Ser Gln Pro Gln Leu Gln	

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Leu Lys Ile Leu Arg Gln Asn Ala Asn Lys Tyr Gly Val Ser Ala Gln				
	710	715	720	
acc att gga tca gtg gtg agc tct gct ttt tct ggg act tct caa gcg				2264
Thr Ile Gly Ser Val Val Ser Ser Ala Phe Ser Gly Thr Ser Gln Ala				
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Val	Ile	Leu	Glu	Ile	Gln	Lys	Ile	Ala	Gly	Ala	Asn	Glu	Ile	Glu Ile
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Ser	Ile	Glu	Asp	Val	Lys	Phe	Asp	Leu	Val	Leu	Gly	Ala	Ile	Leu Ala
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Asp	Tyr	Met	Thr	Gln	Lys	Ser	Lys	Ile	Phe	Gln	Lys	Ala	Ile	Glu Lys
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His	Ala	Glu	Val	Glu	Phe	Thr	Thr	Leu	Gln	Val	Gly	Tyr	Gly	Thr Thr
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Ile	Asn	Leu	Ser	Glu	Val	Thr	Leu	Ile	Gly	Gly	Gly	Gly	Asp	Ser Ser
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Pro	Phe	Gln	Thr	Phe	Val	Phe	Ser	His	Ser	Gln	Glu	Ala	Val	Asp Lys
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 Gly Lys Val Glu Ser Tyr His Thr Ser Thr Ser Glu Ser Gln Pro Gln
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 Asn Ala Phe Ser Lys Asn Leu Trp Asn Leu Ile His Tyr Gly Gly Glu
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 Thr Asp Ala Asp Ser Lys Asp Ile Trp Ser Gln Val Arg Lys Gln Phe
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 Asp Phe Ile Pro Gly Lys Thr Pro Val Cys Val Gly Val Cys Tyr Ile
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Asn Gly Ala Thr Glu Ser Gly Ser Ser Tyr Val Asn Met Val Ala Asn	
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Pro Lys Ile Ala Asn Leu Leu Ser Ser Gly Ala Leu Asp Asn Leu Asn	
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755	760 765 770

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Lys Asp Leu Ala Asn Met Ile Pro Lys Asp Phe Gly Ser Lys Thr Leu	
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Lys Ser Ile Ile Phe Asn Gly Lys Asn Thr Ile Asn Phe Thr Gln Tyr			
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Gln Gly Lys Leu Ser Phe Ile Ser Lys Asp Phe Ser Asn Ile Ser Leu			
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Asp Thr Leu Asn Ala Thr Asn Gly Leu Thr Leu Asn Ala Pro Lys Asn			
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Glu Thr Leu Glu Ala Asn Ala Asn Asn Phe Ala Phe Leu Gly Ala Ile			
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Leu Ile Val Asn Asn Ala Phe Asn Asn Asn Ser Asn Tyr Arg Ala Asp			
1380	1385	1390	
att agc ggt aat ctc aat gtg gtt aaa gga gcg gct ctc agc acg aat			4280
Ile Ser Gly Asn Leu Asn Val Val Lys Gly Ala Ala Leu Ser Thr Asn			
1395	1400	1405	1410
gaa aat ggt ttg aat gtg ggg ggc gat ttc aag agc gaa ggg tca tta			4328
Glu Asn Gly Leu Asn Val Gly Gly Asp Phe Lys Ser Glu Gly Ser Leu			
1415	1420	1425	
atc ttt aat ctt aac aat aaa acc aat caa acg att att aat gtg gct			4376

Ile Phe Asn Leu Asn Asn Lys Thr Asn Gln Thr Ile Ile Asn Val Ala	
1430 1435 1440	
ggc aat tct acg atc atg tct tat aac aat caa gct tta atc cat ttt	4424
Gly Asn Ser Thr Ile Met Ser Tyr Asn Asn Gln Ala Leu Ile His Phe	
1445 1450 1455	
aat acc caa ctc aag caa ggc gct tac acg ctt att aat gcg aaa cgc	4472
Asn Thr Gln Leu Lys Gln Gly Ala Tyr Thr Leu Ile Asn Ala Lys Arg	
1460 1465 1470	
atg ctt tat ggt tat gac aat caa atc att cgt gga ggg agc ttg agc	4520
Met Leu Tyr Gly Tyr Asp Asn Gln Ile Ile Arg Gly Gly Ser Leu Ser	
1475 1480 1485 1490	
gat tac ctc aag ctt tac acc ctc att gat ttt aac ggc aaa cgc atg	4568
Asp Tyr Leu Lys Leu Tyr Thr Leu Ile Asp Phe Asn Gly Lys Arg Met	
1495 1500 1505	
caa tta aac ggc gat tca cta agc tat gac aac caa ccg gtc aat att	4616
Gln Leu Asn Gly Asp Ser Leu Ser Tyr Asp Asn Gln Pro Val Asn Ile	
1510 1515 1520	
aaa gat ggg ggt ctt gtg gta agc ttt aaa gac aat cag ggg caa atg	4664
Lys Asp Gly Gly Leu Val Val Ser Phe Lys Asp Asn Gln Gly Gln Met	
1525 1530 1535	
gtg tat tca tct atc ctt tat gat aaa gtt caa gtt agc gtc tct gat	4712
Val Tyr Ser Ser Ile Leu Tyr Asp Lys Val Gln Val Ser Val Ser Asp	
1540 1545 1550	
aag ccc atg gat att cat gcc cct agt ttg gag tat tac att aaa tac	4760
Lys Pro Met Asp Ile His Ala Pro Ser Leu Glu Tyr Tyr Ile Lys Tyr	
1555 1560 1565 1570	
att caa ggc agt gct ggt ttg gat gcg atc aaa tct gca ggc aat aat	4808
Ile Gln Gly Ser Ala Gly Leu Asp Ala Ile Lys Ser Ala Gly Asn Asn	
1575 1580 1585	
tcc att ctg tgg ttg aat gag ctt ttt gtg gct aaa ggg ggt aat ccc	4856
Ser Ile Leu Trp Leu Asn Glu Leu Phe Val Ala Lys Gly Gly Asn Pro	
1590 1595 1600	
ttg ttc gct cct tat tat ttg caa gac aat ccc act gaa cac att gtt	4904
Leu Phe Ala Pro Tyr Tyr Leu Gln Asp Asn Pro Thr Glu His Ile Val	
1605 1610 1615	
act tta atg aaa gat att act agc gct tta ggc atg ctt tct aaa ccc	4952
Thr Leu Met Lys Asp Ile Thr Ser Ala Leu Gly Met Leu Ser Lys Pro	
1620 1625 1630	
aat ctt aaa aac aat tcc acc gat gct tta cag ctc aac act tac acg	5000
Asn Leu Lys Asn Asn Ser Thr Asp Ala Leu Gln Leu Asn Thr Tyr Thr	
1635 1640 1645 1650	

caa caa atg agc cgt tta gcc aag ctt tct aat ttc gct tcc ttt gat	5048
Gln Gln Met Ser Arg Leu Ala Lys Leu Ser Asn Phe Ala Ser Phe Asp	
1655 1660 1665	
tca acg gat ttt agc gaa cgc ttg agc agt ctt aaa aac caa aga ttt	5096
Ser Thr Asp Phe Ser Glu Arg Leu Ser Ser Leu Lys Asn Gln Arg Phe	
1670 1675 1680	
gct gat gca atc cct aat gcg atg gat gtg att tta aaa tac tct caa	5144
Ala Asp Ala Ile Pro Asn Ala Met Asp Val Ile Leu Lys Tyr Ser Gln	
1685 1690 1695	
agg gat aaa cta aaa aac aac ctt tgg gcg acc ggc gtt ggg ggc gtg	5192
Arg Asp Lys Leu Lys Asn Asn Leu Trp Ala Thr Gly Val Gly Gly Val	
1700 1705 1710	
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Ser Phe Val Glu Asn Gly Thr Gly Thr Leu Tyr Gly Val Asn Val Gly	
1715 1720 1725 1730	
tat gac aga ttc att aag ggt gtg att gtt gga ggg tat gcg gct tat	5288
Tyr Asp Arg Phe Ile Lys Gly Val Ile Val Gly Gly Tyr Ala Ala Tyr	
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Gly Tyr Ser Gly Phe Tyr Glu Arg Ile Thr Asn Ser Lys Ser Asp Asn	
1750 1755 1760	
gtg gat gtg ggc ttg tat gcg agg gct ttc att aaa aag agc gag cta	5384
Val Asp Val Gly Leu Tyr Ala Arg Ala Phe Ile Lys Lys Ser Glu Leu	
1765 1770 1775	
acc ttt agc gtc aat gaa act tgg ggg gct aat aaa aac caa atc agc	5432
Thr Phe Ser Val Asn Glu Thr Trp Gly Ala Asn Lys Asn Gln Ile Ser	
1780 1785 1790	
tcc aac gac act ctg ctt tct atg atc aat cag tcc tat aaa tac agc	5480
Ser Asn Asp Thr Leu Leu Ser Met Ile Asn Gln Ser Tyr Lys Tyr Ser	
1795 1800 1805 1810	
aca tgg acg acg aac gca aaa gtt aat tac ggg tat gat ttc atg ttt	5528
Thr Trp Thr Thr Asn Ala Lys Val Asn Tyr Gly Tyr Asp Phe Met Phe	
1815 1820 1825	
aaa aac aaa agc atc att tta aaa cct caa att ggt tta agg tat tac	5576
Lys Asn Lys Ser Ile Ile Leu Lys Pro Gln Ile Gly Leu Arg Tyr Tyr	
1830 1835 1840	
tat atc ggc atg acc ggt tta gaa ggg gtg atg cat aat gcg ctc tat	5624
Tyr Ile Gly Met Thr Gly Leu Glu Gly Val Met His Asn Ala Leu Tyr	
1845 1850 1855	
aac cag ttt aaa gcg aac gcc gat ccg tct aaa aaa tcc gtt tta acg	5672
Asn Gln Phe Lys Ala Asn Ala Asp Pro Ser Lys Lys Ser Val Leu Thr	
1860 1865 1870	

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 Ile Glu Leu Ala Leu Glu Asn Arg His Tyr Phe Asn Thr Asn Ser Tyr
 1875 1880 1885 1890

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 Phe Tyr Ala Ile Gly Gly Phe Gly Arg Asp Leu Leu Val Asn Ser Met
 1895 1900 1905

ggg gat aaa ttg gtg cgt ttt att ggt aac aac act ttg agc tac agg 5816
 Gly Asp Lys Leu Val Arg Phe Ile Gly Asn Asn Thr Leu Ser Tyr Arg
 1910 1915 1920

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 Lys Gly Glu Leu Tyr Asn Thr Phe Ala Ser Ile Thr Thr Gly Gly Glu
 1925 1930 1935

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 Val Arg Leu Phe Lys Ser Phe Tyr Ala Asn Ala Gly Val Gly Ala Arg
 1940 1945 1950

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 Phe Gly Leu Asp Tyr Lys Met Ile Asn Ile Thr Gly Asn Ile Gly Met
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aatcaatggt ggg 6025

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 Gln Phe Thr Gln Ser Asn Gly Gln Lys Phe Val Phe Glu Thr Phe
 35 40 45
 Asn Pro Gly Ser Ile Thr Tyr Lys Tyr Phe Thr Ile His Ser Ser Leu
 50 55 60
 Phe His Thr Asp Ala Asp Ser Lys Asp Ile Trp Ser Gln Val Arg Lys
 65 70 75 80
 Gln Phe Asp Phe Ile Pro Gly Lys Thr Pro Val Cys Val Gly Val Cys
 85 90 95
 Tyr Ile Ala Pro Tyr Lys Asn Gln Asp Leu Ile Gly Ser Ser Ala Phe
 100 105 110
 Ala Trp Ser Leu Asn Phe Gly Ala Thr Val Val Gly Thr Leu Leu Leu
 115 120 125
 Gly Ser Ala Gln Glu Lys Ala Asn Asn Asn Gly Gly Ser Ile Trp Phe
 130 135 140

Gly	Lys	Asn	Asn	Leu	Leu	Tyr	Leu	His	Gly	Asn	Phe	Asn	Ala	Thr	Asn	
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Ile	Phe	Leu	Thr	Asn	Asn	Phe	Asn	Val	Gly	Asn	Pro	Asn	Ala	Gly	Gly	
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Gly	Ala	Thr	Ile	Asn	Phe	Asn	Ala	Asp	Glu	Thr	Leu	Asn	Ala	Asp	Gly	
			180					185						190		
Leu	Asn	Tyr	Thr	Asn	Phe	Gln	Thr	Val	Ala	Leu	Gly	Leu	Gln	Thr	Ser	
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Ala	Ser	Gln	His	Ser	Trp	Ala	Asn	Phe	Asn	Ser	Lys	Leu	Ser	Met	Glu	
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Ile	Lys	Asn	Ser	Asn	Phe	Arg	Asp	Phe	Thr	Trp	Gly	Gly	Phe	Asn	Phe	
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Asn	Ser	Gly	Arg	Ile	Thr	Phe	Glu	Asn	Thr	Thr	Phe	Ser	Gly	Trp	Thr	
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Asn	Ile	Asn	Gly	Ala	Thr	Glu	Ser	Gly	Ser	Ser	Tyr	Val	Asn	Met	Val	
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Ala	Asn	Thr	Asp	Leu	Ile	Phe	Ser	Asn	Ser	Ile	Leu	Gly	Gly	Gly	Ile	
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Arg	Tyr	Asp	Leu	Lys	Ala	Asn	Asn	Ile	Ile	Phe	Asn	Asn	Ser	Gln	Met	
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Val	Ile	Asp	Val	Ser	Lys	Asn	Val	Asn	Gln	Ser	Ser	Leu	Asn	Gly	Asn	
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Val	Thr	Phe	Asn	Asn	Ser	Arg	Leu	Ser	Val	Lys	Pro	Asn	Ala	Ala	Ile	
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Asn	Ile	Gly	Asp	Ser	Gln	Thr	Gln	Thr	Ala	Leu	Glu	Asn	Ala	Ser	Ser	
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Leu	Ser	Phe	Tyr	Asn	Asn	Ser	Val	Ala	Asn	Phe	Asn	Gly	Thr	Thr	Ala	
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Phe	Asn	Gly	Val	Ser	Tyr	Leu	Asn	Leu	Asn	Pro	Asn	Ala	Gln	Val	Ser	
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Phe	Asn	Gln	Val	Asn	Phe	Asn	Asn	Ala	Asn	Val	Thr	Phe	Tyr	Gly	Ile	
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Pro	Leu	Phe	Gly	Lys	Thr	Pro	Asp	Phe	Gly	Asn	Ser	Ala	Arg	Leu	Ile	
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Asn	Phe	Lys	Gly	Asn	Thr	Asn	Phe	Asn	Gln	Ala	Thr	Leu	Asn	Leu	Arg	
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Ala	Lys	Asn	Ile	His	Ile	Asn	Phe	Gln	Gly	Val	Ser	Thr	Phe	Lys	Gln	
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Asn	Ser	Thr	Met	Asn	Leu	Ala	Glu	Ser	Ser	Gln	Ala	Ser	Phe	Asn	Ala	
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465					470					475					480	
Leu	Asn	Phe	Asn	Gly	Asn	Ser	Val	Phe	Asn	Ala	Pro	Val	Ser	Phe	Tyr	
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Ala	Asn	His	Ser	Gln	Ile	Ser	Phe	Thr	Lys	Leu	Ala	Thr	Phe	Asn	Ser	
		500						505						510		
Asp	Ala	Ser	Phe	Asp	Leu	Ser	Asn	Asn	Ser	Thr	Leu	Asn	Phe	Gln	Ser	
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Val	Leu	Leu	Asn	Gly	Ala	Leu	Asn	Leu	Leu	Gly	Asn	Gly	Ser	Asn	Asn	
	530					535					540					
Leu	Ala	Ile	Asn	Ala	Lys	Gly	Asn	Phe	Ser	Phe	Gly	Ser	Lys	Gly	Ile	
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Leu	Asn	Leu	Ser	Tyr	Met	Asn	Leu	Phe	Gly	Gly	Asp	Lys	Lys	Thr	Ser	
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Val	Tyr	Asp	Val	Leu	Gln	Ala	Gln	Asn	Ile	Asp	Gly	Leu	Met	Gly	Asn	

His Ser Ser Gly Phe Glu Lys Phe Ile Val Lys Thr Leu Gly Ile Glu
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 Asn Val Glu Asn Phe Ile Asn Asn Trp Tyr Gly Lys Gln Ser Leu Ser
 1045 1050 1055
 Ser Phe Ala Asn Asn Phe Val Pro Gly Gly Leu Asn Gln Ala Leu Asp
 1060 1065 1070
 Lys Ile Gly Ser Ser Ser Asp Ala Lys Asp Leu Gln Asn Phe Leu Asp
 1075 1080 1085
 Lys Thr Thr Phe Gly Asp Ile Leu Asn Gln Met Ile Glu Gln Ala Pro
 1090 1095 1100
 Leu Ile Asn Lys Leu Ile Ser Trp Leu Gly Pro Gln Asp Leu Ser Val
 1105 1110 1115 1120
 Leu Val Asn Ile Ala Leu Asn Ser Ile Thr Asn Pro Ser Lys Glu Leu
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 Thr Ser Thr Ile Ser Ser Ile Gly Glu Lys Ala Leu Asn Asp Leu Leu
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 Gly Asp Gly Val Val Asn Lys Ile Met Ser Asn Gln Val Leu Gly Gln
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 1170 1175 1180
 Gln Gly Leu Gly Ser Ile Leu Pro Gln Ser Leu Gln Asp Glu Leu Lys
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 Lys Leu Gly Met Gly Ser Leu Leu Gly Ser Arg Gly Leu His Asn Leu
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 Trp Gln Arg Gly Asn Phe Asn Phe Val Ala Lys Asp Tyr Leu Phe Thr
 1220 1225 1230
 Asn Asn Ser Ser Phe Ser Asn Ala Thr Gly Gly Glu Leu Asn Phe Val
 1235 1240 1245
 Ala Gly Lys Ser Ile Ile Phe Asn Gly Lys Asn Thr Ile Asn Phe Thr
 1250 1255 1260
 Gln Tyr Gln Gly Lys Leu Ser Phe Ile Ser Lys Asp Phe Ser Asn Ile
 1265 1270 1275 1280
 Ser Leu Asp Thr Leu Asn Ala Thr Asn Gly Leu Thr Leu Asn Ala Pro
 1285 1290 1295
 Lys Asn Asp Ile Ser Val Gln Lys Gly Gln Ile Cys Val Asn Val Leu
 1300 1305 1310
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 Thr Asn Glu Thr Leu Glu Ala Asn Ala Asn Asn Phe Ala Phe Leu Gly
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 Ala Ile Lys Ala Asn Gly Leu Val Asp Phe Ser Lys Val Leu Gln Asn
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 Thr Thr Ile Gly Thr Leu Asp Leu Gly Pro Asn Ala Thr Phe Lys Ala
 1365 1370 1375
 Asn His Leu Ile Val Asn Asn Ala Phe Asn Asn Asn Ser Asn Tyr Arg
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 Ala Asp Ile Ser Gly Asn Leu Asn Val Val Lys Gly Ala Ala Leu Ser
 1395 1400 1405
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 1410 1415 1420
 Ser Leu Ile Phe Asn Leu Asn Asn Lys Thr Asn Gln Thr Ile Ile Asn
 1425 1430 1435 1440
 Val Ala Gly Asn Ser Thr Ile Met Ser Tyr Asn Asn Gln Ala Leu Ile
 1445 1450 1455
 His Phe Asn Thr Gln Leu Lys Gln Gly Ala Tyr Thr Leu Ile Asn Ala

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Lys Arg Met Leu Tyr Gly Tyr Asp Asn Gln Ile Ile Arg Gly Gly Ser					
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Leu Ser Asp Tyr Leu Lys Leu Tyr Thr Leu Ile Asp Phe Asn Gly Lys					
	1490		1495		1500
Arg Met Gln Leu Asn Gly Asp Ser Leu Ser Tyr Asp Asn Gln Pro Val					
1505		1510		1515	1520
Asn Ile Lys Asp Gly Gly Leu Val Val Ser Phe Lys Asp Asn Gln Gly					
	1525		1530		1535
Gln Met Val Tyr Ser Ser Ile Leu Tyr Asp Lys Val Gln Val Ser Val					
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Ser Asp Lys Pro Met Asp Ile His Ala Pro Ser Leu Glu Tyr Tyr Ile					
	1555		1560		1565
Lys Tyr Ile Gln Gly Ser Ala Gly Leu Asp Ala Ile Lys Ser Ala Gly					
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Asn Asn Ser Ile Leu Trp Leu Asn Glu Leu Phe Val Ala Lys Gly Gly					
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Asn Pro Leu Phe Ala Pro Tyr Tyr Leu Gln Asp Asn Pro Thr Glu His					
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Ile Val Thr Leu Met Lys Asp Ile Thr Ser Ala Leu Gly Met Leu Ser					
	1620		1625		1630
Lys Pro Asn Leu Lys Asn Asn Ser Thr Asp Ala Leu Gln Leu Asn Thr					
	1635		1640		1645
Tyr Thr Gln Gln Met Ser Arg Leu Ala Lys Leu Ser Asn Phe Ala Ser					
	1650		1655		1660
Phe Asp Ser Thr Asp Phe Ser Glu Arg Leu Ser Ser Leu Lys Asn Gln					
1665		1670		1675	1680
Arg Phe Ala Asp Ala Ile Pro Asn Ala Met Asp Val Ile Leu Lys Tyr					
	1685		1690		1695
Ser Gln Arg Asp Lys Leu Lys Asn Asn Leu Trp Ala Thr Gly Val Gly					
	1700		1705		1710
Gly Val Ser Phe Val Glu Asn Gly Thr Gly Thr Leu Tyr Gly Val Asn					
	1715		1720		1725
Val Gly Tyr Asp Arg Phe Ile Lys Gly Val Ile Val Gly Gly Tyr Ala					
	1730		1735		1740
Ala Tyr Gly Tyr Ser Gly Phe Tyr Glu Arg Ile Thr Asn Ser Lys Ser					
1745		1750		1755	1760
Asp Asn Val Asp Val Gly Leu Tyr Ala Arg Ala Phe Ile Lys Lys Ser					
	1765		1770		1775
Glu Leu Thr Phe Ser Val Asn Glu Thr Trp Gly Ala Asn Lys Asn Gln					
	1780		1785		1790
Ile Ser Ser Asn Asp Thr Leu Leu Ser Met Ile Asn Gln Ser Tyr Lys					
	1795		1800		1805
Tyr Ser Thr Trp Thr Thr Asn Ala Lys Val Asn Tyr Gly Tyr Asp Phe					
	1810		1815		1820
Met Phe Lys Asn Lys Ser Ile Ile Leu Lys Pro Gln Ile Gly Leu Arg					
1825		1830		1835	1840
Tyr Tyr Tyr Ile Gly Met Thr Gly Leu Glu Gly Val Met His Asn Ala					
	1845		1850		1855
Leu Tyr Asn Gln Phe Lys Ala Asn Ala Asp Pro Ser Lys Lys Ser Val					
	1860		1865		1870
Leu Thr Ile Glu Leu Ala Leu Glu Asn Arg His Tyr Phe Asn Thr Asn					
	1875		1880		1885
Ser Tyr Phe Tyr Ala Ile Gly Gly Phe Gly Arg Asp Leu Leu Val Asn					
	1890		1895		1900

Ser Met Gly Asp Lys Leu Val Arg Phe Ile Gly Asn Asn Thr Leu Ser
 1905 1910 1915 1920
 Tyr Arg Lys Gly Glu Leu Tyr Asn Thr Phe Ala Ser Ile Thr Thr Gly
 1925 1930 1935
 Gly Glu Val Arg Leu Phe Lys Ser Phe Tyr Ala Asn Ala Gly Val Gly
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 1955 1960 1965
 Gly Met Arg Leu Ala Phe
 1970

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 gct atg att aat aga gcg acc tta cac aat tat tct gaa att gaa aaa 168
 Met Ile Asn Arg Ala Thr Leu His Asn Tyr Ser Glu Ile Glu Lys
 1 5 10 15
 aag aat atc atg ctc agt gat agg gtc gtt gtc att aga agc ggc gat 216
 Lys Asn Ile Met Leu Ser Asp Arg Val Val Val Ile Arg Ser Gly Asp
 20 25 30
 gtg atc cct aaa atc atc aag cct tta gaa tct tat aga gac ggc tcg 264
 Val Ile Pro Lys Ile Ile Lys Pro Leu Glu Ser Tyr Arg Asp Gly Ser
 35 40 45
 caa cat aaa att gaa cgc ccc aag gtt tgc cct ata tgt tcg cat gag 312
 Gln His Lys Ile Glu Arg Pro Lys Val Cys Pro Ile Cys Ser His Glu
 50 55 60
 ctt ttg tgc gaa gag att ttt act tat tgt caa aac ctt aat tgc ccg 360
 Leu Leu Cys Glu Glu Ile Phe Thr Tyr Cys Gln Asn Leu Asn Cys Pro
 65 70 75
 gca agg ttg aaa gaa agc ttg att cat ttc gct tct aaa gac gct tta 408
 Ala Arg Leu Lys Glu Ser Leu Ile His Phe Ala Ser Lys Asp Ala Leu
 80 85 90 95
 aac att caa ggc ttg ggc gat aaa gtc ata gag caa ctt ttt gaa gaa 456
 Asn Ile Gln Gly Leu Gly Asp Lys Val Ile Glu Gln Leu Phe Glu Glu
 100 105 110
 aag ctc att ttt aac gct ctg gat ttg tat gct tta aaa tta gaa gat 504
 Lys Leu Ile Phe Asn Ala Leu Asp Leu Tyr Ala Leu Lys Leu Glu Asp
 115 120 125

tta atg cgg cta gac aaa ttt aaa att aaa aaa gct caa aat cta tta 552
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 130 135 140

gac gct att tta aaa agc aaa aac cct ccc tta tgg cgt ttg att aac 600
 Asp Ala Ile Leu Lys Ser Lys Asn Pro Pro Leu Trp Arg Leu Ile Asn
 145 150 155

gct tta ggg att gag cat att ggt aag gga gcg agt aaa acg ctg gcc 648
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 Lys Tyr Gly Leu Asn Val Leu Glu Lys Ser Glu Xaa Ser Phe
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 35 40 45
 His Lys Ile Glu Arg Pro Lys Val Cys Pro Ile Cys Ser His Glu Leu
 50 55 60
 Leu Cys Glu Glu Ile Phe Thr Tyr Cys Gln Asn Leu Asn Cys Pro Ala
 65 70 75 80
 Arg Leu Lys Glu Ser Leu Ile His Phe Ala Ser Lys Asp Ala Leu Asn
 85 90 95
 Ile Gln Gly Leu Gly Asp Lys Val Ile Glu Gln Leu Phe Glu Glu Lys
 100 105 110
 Leu Ile Phe Asn Ala Leu Asp Leu Tyr Ala Leu Lys Leu Glu Asp Leu
 115 120 125
 Met Arg Leu Asp Lys Phe Lys Ile Lys Lys Ala Gln Asn Leu Leu Asp
 130 135 140
 Ala Ile Leu Lys Ser Lys Asn Pro Pro Leu Trp Arg Leu Ile Asn Ala
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 Met Arg Pro Gly Val Leu Gln Val Gly Ala Met Tyr Ala Asn Gly Val
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ggg atc caa acc aac aga tta aaa gcc gct cgc tat tat gaa tgg gtt 152
 Gly Ile Gln Thr Asn Arg Leu Lys Ala Ala Arg Tyr Tyr Glu Trp Val
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gca gcg ggg gcg atg cga ccg ctt gcg cga atc tgg ctc aga tgt atg 200
 Ala Ala Gly Ala Met Arg Pro Leu Ala Arg Ile Trp Leu Arg Cys Met
 35 40 45 50

aaa aca aga aaa atg cgg att caa acg ata aag aaa acg ctt tgc aat 248
 Lys Thr Arg Lys Met Arg Ile Gln Thr Ile Lys Lys Thr Leu Cys Asn
 55 60 65

tgt atg cgg tgg ctt gtc aag ggg ggg ata tgc tcg cat gca ata att 296
 Cys Met Arg Trp Leu Val Lys Gly Gly Ile Cys Ser His Ala Ile Ile
 70 75 80

tgg ggt gga tgt ttg cta acg gaa gtg ggg tcc caa aag att att aca 344
 Trp Gly Gly Cys Leu Leu Thr Glu Val Gly Ser Gln Lys Ile Ile Thr
 85 90 95

aag cga taagttatta taaattttca tgcgagaatg ggaatgatat ggggtgttat 400
 Lys Arg
 100

aat 403

<210> 16
 <211> 100
 <212> PRT
 <213> Helicobacter pylori

<400> 16
 Met Val Met Arg Pro Gly Val Leu Gln Val Gly Ala Met Tyr Ala Asn
 1 5 10 15
 Gly Val Gly Ile Gln Thr Asn Arg Leu Lys Ala Ala Arg Tyr Tyr Glu
 20 25 30

Leu Asp Trp Cys Asp Ile Met Ser Ala Leu Lys Ala Asp Pro Ile Gln	
115 120 125 130	
gcg gca aaa ctt tct ttc aaa tac agc cct tac cct att aat acc ggt	488
Ala Ala Lys Leu Ser Phe Lys Tyr Ser Pro Tyr Pro Ile Asn Thr Gly	
135 140 145	
gcc ggt gaa tta aaa gcg gtt caa aaa cgc ttg agc gat ttc gct aaa	536
Ala Gly Glu Leu Lys Ala Val Gln Lys Arg Leu Ser Asp Phe Ala Lys	
150 155 160	
agc gga tct ttg ggg cct ttc agt aac ggc tat tac ggg cat aaa act	584
Ser Gly Ser Leu Gly Pro Phe Ser Asn Gly Tyr Tyr Gly His Lys Thr	
165 170 175	
tat cgt tta agt ccg gag caa aat tta atc gtc tta agc cac tac ctc	632
Tyr Arg Leu Ser Pro Glu Gln Asn Leu Ile Val Leu Ser His Tyr Leu	
180 185 190	
aag ctt tta gaa atc caa agg gaa gcg gcg aaa atg acc gct att ttt	680
Lys Leu Leu Glu Ile Gln Arg Glu Ala Ala Lys Met Thr Ala Ile Phe	
195 200 205 210	
ggg gcc aaa cag cct cac cca caa agc cta acg gtg ggg ggt gtt acg	728
Gly Ala Lys Gln Pro His Pro Gln Ser Leu Thr Val Gly Gly Val Thr	
215 220 225	
agt gtt atg gat ata ttg gat ccg acg aga ttg gct gaa tgg aag agc	776
Ser Val Met Asp Ile Leu Asp Pro Thr Arg Leu Ala Glu Trp Lys Ser	
230 235 240	
aag ttt gaa gtg gtg gcc aat ttc atc aac cat gct tac tac cct gat	824
Lys Phe Glu Val Val Ala Asn Phe Ile Asn His Ala Tyr Tyr Pro Asp	
245 250 255	
ttg gtg atg gca ggc gaa atg ttc gct aac gaa caa tcc gtt atc aaa	872
Leu Val Met Ala Gly Glu Met Phe Ala Asn Glu Gln Ser Val Ile Lys	
260 265 270	
ggc tgt ggc tta agg aat ttt atc gct tat gaa gaa gtg ctg ctt ggg	920
Gly Cys Gly Leu Arg Asn Phe Ile Ala Tyr Glu Glu Val Leu Leu Gly	
275 280 285 290	
agg gat aaa tac ctt ttg agt agt ggg gtg gtg ctt gat ggg gat att	968
Arg Asp Lys Tyr Leu Leu Ser Ser Gly Val Val Leu Asp Gly Asp Ile	
295 300 305	
tct aaa tta cac ccc att gat gaa agt ttg att aaa gaa gaa gtt acg	1016
Ser Lys Leu His Pro Ile Asp Glu Ser Leu Ile Lys Glu Glu Val Thr	
310 315 320	
cat tct tgg tat caa tac gaa gac act aaa gaa gtg caa ctc cac cct	1064
His Ser Trp Tyr Gln Tyr Glu Asp Thr Lys Glu Val Gln Leu His Pro	
325 330 335	

tat gac ggg caa acg aac ccg cat tat acc ggt tta aaa gac ggc gag	1112
Tyr Asp Gly Gln Thr Asn Pro His Tyr Thr Gly Leu Lys Asp Gly Glu	
340 345 350	
agc gtg ggg att gaa aat aaa atc atc cct gct aaa gtg ctt gac act	1160
Ser Val Gly Ile Glu Asn Lys Ile Ile Pro Ala Lys Val Leu Asp Thr	
355 360 365 370	
aaa aat aaa tat tct tgg ata aaa tcg ccc aga tac gat agt aag ccc	1208
Lys Asn Lys Tyr Ser Trp Ile Lys Ser Pro Arg Tyr Asp Ser Lys Pro	
375 380 385	
atg gaa gta ggt cct tta agt tcc gta gtg gta ggt tta gcg gcg aaa	1256
Met Glu Val Gly Pro Leu Ser Ser Val Val Val Gly Leu Ala Ala Lys	
390 395 400	
aac cct tat gtt act gaa gtg gct acg aag ttt tta aaa gac act aaa	1304
Asn Pro Tyr Val Thr Glu Val Ala Thr Lys Phe Leu Lys Asp Thr Lys	
405 410 415	
ctg cct tta gag gcg ttg ttt tca acg ctt ggg cga aca gct gca agg	1352
Leu Pro Leu Glu Ala Leu Phe Ser Thr Leu Gly Arg Thr Ala Ala Arg	
420 425 430	
tgt att gaa gct aaa acg atc gct gat aat ggc ctt ttg gcg ttt gat	1400
Cys Ile Glu Ala Lys Thr Ile Ala Asp Asn Gly Leu Leu Ala Phe Asp	
435 440 445 450	
gcg tta gtg gaa aat cta aaa agc gat caa agc act tgt gct cct tat	1448
Ala Leu Val Glu Asn Leu Lys Ser Asp Gln Ser Thr Cys Ala Pro Tyr	
455 460 465	
cac att gat aaa aat caa gaa tat aaa ggg cgc tac att ggt caa gtg	1496
His Ile Asp Lys Asn Gln Glu Tyr Lys Gly Arg Tyr Ile Gly Gln Val	
470 475 480	
cca agg ggc atg cta agc cat tgg gtg cgt att aaa aac ggc gtg gtg	1544
Pro Arg Gly Met Leu Ser His Trp Val Arg Ile Lys Asn Gly Val Val	
485 490 495	
gaa aat tat caa gcg gtg gtg cct tct act tgg aat gca ggg cct aga	1592
Glu Asn Tyr Gln Ala Val Val Pro Ser Thr Trp Asn Ala Gly Pro Arg	
500 505 510	
gat tct caa aat caa agg ggg gct tat gaa atg agc ttg att ggc act	1640
Asp Ser Gln Asn Gln Arg Gly Ala Tyr Glu Met Ser Leu Ile Gly Thr	
515 520 525 530	
aaa atc gct gat tta acc cag cct tta gaa atc att agg act atc cat	1688
Lys Ile Ala Asp Leu Thr Gln Pro Leu Glu Ile Ile Arg Thr Ile His	
535 540 545	
tct ttt gac cca tgc atc gca tgc tcg gtg cat gtg atg gat ttt aaa	1736
Ser Phe Asp Pro Cys Ile Ala Cys Ser Val His Val Met Asp Phe Lys	
550 555 560	

ggg cag tct tta aac gag ttt aaa gta gag cct aat ttc gct aaa ttc 1784
 Gly Gln Ser Leu Asn Glu Phe Lys Val Glu Pro Asn Phe Ala Lys Phe
 565 570 575

taaaaagggt tacgcatgga taaaatgaat aaggctcggtt tacacaaaga ata 1837

<210> 18
 <211> 578
 <212> PRT
 <213> Helicobacter pylori

<400> 18
 Met Ser Lys Lys Ile Val Val Asp Pro Ile Thr Arg Ile Glu Gly His
 1 5 10 15
 Leu Arg Ile Glu Val Ile Val Asp Asp Asp Asn Val Ile Thr Asp Ala
 20 25 30
 Phe Ser Ser Ser Thr Leu Phe Arg Gly Leu Glu Thr Ile Ile Lys Gly
 35 40 45
 Arg Asp Pro Arg Asp Ala Gly Phe Ile Ala Gln Arg Ile Cys Gly Val
 50 55 60
 Cys Thr Tyr Ser His Tyr Lys Ala Gly Ile Thr Ala Val Glu Asn Ala
 65 70 75 80
 Leu Gly Ile Thr Pro Pro Leu Asn Ala Gln Leu Val Arg Ser Leu Met
 85 90 95
 Asn Met Ala Leu Leu Phe His Asp His Val Val His Phe Tyr Thr Leu
 100 105 110
 His Gly Leu Asp Trp Cys Asp Ile Met Ser Ala Leu Lys Ala Asp Pro
 115 120 125
 Ile Gln Ala Ala Lys Leu Ser Phe Lys Tyr Ser Pro Tyr Pro Ile Asn
 130 135 140
 Thr Gly Ala Gly Glu Leu Lys Ala Val Gln Lys Arg Leu Ser Asp Phe
 145 150 155 160
 Ala Lys Ser Gly Ser Leu Gly Pro Phe Ser Asn Gly Tyr Tyr Gly His
 165 170 175
 Lys Thr Tyr Arg Leu Ser Pro Glu Gln Asn Leu Ile Val Leu Ser His
 180 185 190
 Tyr Leu Lys Leu Leu Glu Ile Gln Arg Glu Ala Ala Lys Met Thr Ala
 195 200 205
 Ile Phe Gly Ala Lys Gln Pro His Pro Gln Ser Leu Thr Val Gly Gly
 210 215 220
 Val Thr Ser Val Met Asp Ile Leu Asp Pro Thr Arg Leu Ala Glu Trp
 225 230 235 240
 Lys Ser Lys Phe Glu Val Val Ala Asn Phe Ile Asn His Ala Tyr Tyr
 245 250 255
 Pro Asp Leu Val Met Ala Gly Glu Met Phe Ala Asn Glu Gln Ser Val
 260 265 270
 Ile Lys Gly Cys Gly Leu Arg Asn Phe Ile Ala Tyr Glu Glu Val Leu
 275 280 285
 Leu Gly Arg Asp Lys Tyr Leu Leu Ser Ser Gly Val Val Leu Asp Gly
 290 295 300
 Asp Ile Ser Lys Leu His Pro Ile Asp Glu Ser Leu Ile Lys Glu Glu
 305 310 315 320
 Val Thr His Ser Trp Tyr Gln Tyr Glu Asp Thr Lys Glu Val Gln Leu
 325 330 335

His Pro Tyr Asp Gly Gln Thr Asn Pro His Tyr Thr Gly Leu Lys Asp
 340 345 350
 Gly Glu Ser Val Gly Ile Glu Asn Lys Ile Ile Pro Ala Lys Val Leu
 355 360 365
 Asp Thr Lys Asn Lys Tyr Ser Trp Ile Lys Ser Pro Arg Tyr Asp Ser
 370 375 380
 Lys Pro Met Glu Val Gly Pro Leu Ser Ser Val Val Val Gly Leu Ala
 385 390 395 400
 Ala Lys Asn Pro Tyr Val Thr Glu Val Ala Thr Lys Phe Leu Lys Asp
 405 410 415
 Thr Lys Leu Pro Leu Glu Ala Leu Phe Ser Thr Leu Gly Arg Thr Ala
 420 425 430
 Ala Arg Cys Ile Glu Ala Lys Thr Ile Ala Asp Asn Gly Leu Leu Ala
 435 440 445
 Phe Asp Ala Leu Val Glu Asn Leu Lys Ser Asp Gln Ser Thr Cys Ala
 450 455 460
 Pro Tyr His Ile Asp Lys Asn Gln Glu Tyr Lys Gly Arg Tyr Ile Gly
 465 470 475 480
 Gln Val Pro Arg Gly Met Leu Ser His Trp Val Arg Ile Lys Asn Gly
 485 490 495
 Val Val Glu Asn Tyr Gln Ala Val Val Pro Ser Thr Trp Asn Ala Gly
 500 505 510
 Pro Arg Asp Ser Gln Asn Gln Arg Gly Ala Tyr Glu Met Ser Leu Ile
 515 520 525
 Gly Thr Lys Ile Ala Asp Leu Thr Gln Pro Leu Glu Ile Ile Arg Thr
 530 535 540
 Ile His Ser Phe Asp Pro Cys Ile Ala Cys Ser Val His Val Met Asp
 545 550 555 560
 Phe Lys Gly Gln Ser Leu Asn Glu Phe Lys Val Glu Pro Asn Phe Ala
 565 570 575
 Lys Phe

<210> 19
 <211> 720
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (80)...(613)

<400> 19
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 gctatgggtta taccaaaga atg agt caa aaa atc cta att cta ggt att ggc 112
 Met Ser Gln Lys Ile Leu Ile Leu Gly Ile Gly
 1 5 10
 aat atc ctt ttt ggc gat gaa ggg att ggg gtg cat tta gcc cac tac 160
 Asn Ile Leu Phe Gly Asp Glu Gly Ile Gly Val His Leu Ala His Tyr
 15 20 25
 ctc aaa aaa aat ttt tct ttt ttc cct agc gtg gat att ata gat ggg 208
 Leu Lys Lys Asn Phe Ser Phe Phe Pro Ser Val Asp Ile Ile Asp Gly

30	35	40	
ggg aca atg gcc cag cag ctc att cct tta atc act tcg tat gaa aag			256
Gly Thr Met Ala Gln Gln Leu Ile Pro Leu Ile Thr Ser Tyr Glu Lys			
45	50	55	
ggt ttg att ttg gat tgc gtg agc gct gaa ggc gtt gag ata gga tca			304
Val Leu Ile Leu Asp Cys Val Ser Ala Glu Gly Val Glu Ile Gly Ser			
60	65	70	75
gtc tat gct ttt gat ttt aag gac gct cct aaa gaa atc aca tgg gct			352
Val Tyr Ala Phe Asp Phe Lys Asp Ala Pro Lys Glu Ile Thr Trp Ala			
80	85	90	
ggg agc gct cat gaa gtg gaa atg cta cac act tta agg ctc acg gag			400
Gly Ser Ala His Glu Val Glu Met Leu His Thr Leu Arg Leu Thr Glu			
95	100	105	
ttt tta ggg gat ttg cct aaa act ttt atc gtg ggg ctt gtg cct ttt			448
Phe Leu Gly Asp Leu Pro Lys Thr Phe Ile Val Gly Leu Val Pro Phe			
110	115	120	
gtg ata ggg agc gag acc act ttc aag ctt tca agc aaa att tta aac			496
Val Ile Gly Ser Glu Thr Thr Phe Lys Leu Ser Ser Lys Ile Leu Asn			
125	130	135	
gct tta gaa acc gcc tta aaa gcc ata gaa acc caa ctc aac gca tgg			544
Ala Leu Glu Thr Ala Leu Lys Ala Ile Glu Thr Gln Leu Asn Ala Trp			
140	145	150	155
ggg gtt aaa atg caa cgc acc gat cat atc gct tta gaa tgt atc gct			592
Gly Val Lys Met Gln Arg Thr Asp His Ile Ala Leu Glu Cys Ile Ala			
160	165	170	
gaa ctt tct tat aag ggt ttt tgaattgggtt tttgttttttc tttttaaatg			643
Glu Leu Ser Tyr Lys Gly Phe			
175			
cgттаатgaa gaaacaagcc tgaatttttac gccccttttta gagcgaatgg catgcaattt			703
gcaagcgcgt ttttata			720

<210> 20
 <211> 178
 <212> PRT
 <213> *Helicobacter pylori*

<400> 20
 Met Ser Gln Lys Ile Leu Ile Leu Gly Ile Gly Asn Ile Leu Phe Gly
 1 5 10 15
 Asp Glu Gly Ile Gly Val His Leu Ala His Tyr Leu Lys Lys Asn Phe
 20 25 30
 Ser Phe Phe Pro Ser Val Asp Ile Ile Asp Gly Gly Thr Met Ala Gln
 35 40 45
 Gln Leu Ile Pro Leu Ile Thr Ser Tyr Glu Lys Val Leu Ile Leu Asp
 50 55 60

Cys	Val	Ser	Ala	Glu	Gly	Val	Glu	Ile	Gly	Ser	Val	Tyr	Ala	Phe	Asp	
65					70					75					80	
Phe	Lys	Asp	Ala	Pro	Lys	Glu	Ile	Thr	Trp	Ala	Gly	Ser	Ala	His	Glu	
				85					90					95		
Val	Glu	Met	Leu	His	Thr	Leu	Arg	Leu	Thr	Glu	Phe	Leu	Gly	Asp	Leu	
			100					105					110			
Pro	Lys	Thr	Phe	Ile	Val	Gly	Leu	Val	Pro	Phe	Val	Ile	Gly	Ser	Glu	
		115					120					125				
Thr	Thr	Phe	Lys	Leu	Ser	Ser	Lys	Ile	Leu	Asn	Ala	Leu	Glu	Thr	Ala	
	130					135					140					
Leu	Lys	Ala	Ile	Glu	Thr	Gln	Leu	Asn	Ala	Trp	Gly	Val	Lys	Met	Gln	
145				150					155					160		
Arg	Thr	Asp	His	Ile	Ala	Leu	Glu	Cys	Ile	Ala	Glu	Leu	Ser	Tyr	Lys	
			165					170						175		
Gly	Phe															

<210> 21
 <211> 508
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (51)...(455)

<400> 21 attgaagcga gtaacgctta ttataaaaaa cgcttataaa tcttatcaac atg ggc															56	
															Met Gly	
															1	
aat ttg act tat tac gct tac atg tat ttg atc ctc ttt gta tgc ttg															104	
Asn	Leu	Thr	Tyr	Tyr	Ala	Tyr	Met	Tyr	Leu	Ile	Leu	Phe	Val	Cys	Leu	
		5					10					15				
ctg cct gtg tta tta atg ggg ctt gtt tgg agg ctt act cgc ccc ccc															152	
Leu	Pro	Val	Leu	Leu	Met	Gly	Leu	Val	Trp	Arg	Leu	Thr	Arg	Pro	Pro	
	20					25				30						
tta aag caa aat att cct aat aaa agc ctc tct tta gaa aat tta aac															200	
Leu	Lys	Gln	Asn	Ile	Pro	Asn	Lys	Ser	Leu	Ser	Leu	Glu	Asn	Leu	Asn	
	35				40				45					50		
gaa caa atc aaa aac ctt aaa agc gta cca gct tta gaa aaa ctg aaa															248	
Glu	Gln	Ile	Lys	Asn	Leu	Lys	Ser	Val	Pro	Ala	Leu	Glu	Lys	Leu	Lys	
				55				60						65		
aac gac ttc aat gag cgt ttt aaa att tgc ccc aaa gat aaa gaa act															296	
Asn	Asp	Phe	Asn	Glu	Arg	Phe	Lys	Ile	Cys	Pro	Lys	Asp	Lys	Glu	Thr	
			70					75					80			
ctg tgg tta gaa acg atc caa aaa tta gtc gct tca gaa ttt ttt gaa															344	
Leu	Trp	Leu	Glu	Thr	Ile	Gln	Lys	Leu	Val	Ala	Ser	Glu	Phe	Phe	Glu	
		85					90					95				

tta gaa gac gct att aat ttt ggg caa gaa tta gaa aac gct aac cct 392
 Leu Glu Asp Ala Ile Asn Phe Gly Gln Glu Leu Glu Asn Ala Asn Pro
 100 105 110

aat tac caa caa aaa atc gct aac gct acc ggc tta gcc ctt aag aat 440
 Asn Tyr Gln Gln Lys Ile Ala Asn Ala Thr Gly Leu Ala Leu Lys Asn
 115 120 125 130

aaa aaa gaa aaa gga tagaattgga ttttttagag attgtaggac aagtccttt 495
 Lys Lys Glu Lys Gly
 135

aaaaggagag gta 508

<210> 22
 <211> 135
 <212> PRT
 <213> Helicobacter pylori

<400> 22
 Met Gly Asn Leu Thr Tyr Tyr Ala Tyr Met Tyr Leu Ile Leu Phe Val
 1 5 10 15
 Cys Leu Leu Pro Val Leu Leu Met Gly Leu Val Trp Arg Leu Thr Arg
 20 25 30
 Pro Pro Leu Lys Gln Asn Ile Pro Asn Lys Ser Leu Ser Leu Glu Asn
 35 40 45
 Leu Asn Glu Gln Ile Lys Asn Leu Lys Ser Val Pro Ala Leu Glu Lys
 50 55 60
 Leu Lys Asn Asp Phe Asn Glu Arg Phe Lys Ile Cys Pro Lys Asp Lys
 65 70 75 80
 Glu Thr Leu Trp Leu Glu Thr Ile Gln Lys Leu Val Ala Ser Glu Phe
 85 90 95
 Phe Glu Leu Glu Asp Ala Ile Asn Phe Gly Gln Glu Leu Glu Asn Ala
 100 105 110
 Asn Pro Asn Tyr Gln Gln Lys Ile Ala Asn Ala Thr Gly Leu Ala Leu
 115 120 125
 Lys Asn Lys Lys Glu Lys Gly
 130 135

<210> 23
 <211> 1183
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (51)...(1130)

<400> 23
 atctaaaaat gctacaatgt ttatcttttaa aacgaaaggg caatttaacc atg gac 56
 Met Asp
 1

ttt tta gaa aaa gta tta gac aat caa gtt act gaa agt aaa gaa ttg	104
Phe Leu Glu Lys Val Leu Asp Asn Gln Val Thr Glu Ser Lys Glu Leu	
5 10 15	
gtc agg ctt tat gat tat gat tta tac acg cta ggg gaa gta gcg gat	152
Val Arg Leu Tyr Asp Tyr Asp Leu Tyr Thr Leu Gly Glu Val Ala Asp	
20 25 30	
cgc atg cgc caa aac atg cac caa aaa atc gtg tat ttt aat gtc aat	200
Arg Met Arg Gln Asn Met His Gln Lys Ile Val Tyr Phe Asn Val Asn	
35 40 45 50	
agg cat tta aac cct agc aat att tgc gcg gac gct tgc aaa ttt tgc	248
Arg His Leu Asn Pro Ser Asn Ile Cys Ala Asp Ala Cys Lys Phe Cys	
55 60 65	
gct ttt tca gcc cac aga aaa aac cca aac cct tat gaa atg agc tta	296
Ala Phe Ser Ala His Arg Lys Asn Pro Asn Pro Tyr Glu Met Ser Leu	
70 75 80	
gaa gaa atc cta gaa aag gtt aaa aac tcc tac aac aag ggg att aaa	344
Glu Glu Ile Leu Glu Lys Val Lys Asn Ser Tyr Asn Lys Gly Ile Lys	
85 90 95	
gaa gtc cat atc gtg agc gct cat aac cct aat tac tcc tat gaa tgg	392
Glu Val His Ile Val Ser Ala His Asn Pro Asn Tyr Ser Tyr Glu Trp	
100 105 110	
tat tta aag gtg ttt gaa acc atc aag caa gaa atg cct aac ttg cat	440
Tyr Leu Lys Val Phe Glu Thr Ile Lys Gln Glu Met Pro Asn Leu His	
115 120 125 130	
tta aag gcc atg acc gct gca gaa gtg cat ttt tta agc gtt aaa ttc	488
Leu Lys Ala Met Thr Ala Ala Glu Val His Phe Leu Ser Val Lys Phe	
135 140 145	
aac aaa cct ttt gaa ttg gtg cta gaa gac atg ctc aaa gcc ggg gtg	536
Asn Lys Pro Phe Glu Leu Val Leu Glu Asp Met Leu Lys Ala Gly Val	
150 155 160	
gat tcc atg cct ggt ggg ggg gcg gag att ttt gat gaa gaa atc agg	584
Asp Ser Met Pro Gly Gly Gly Ala Glu Ile Phe Asp Glu Glu Ile Arg	
165 170 175	
cgt aaa atc tgt aat ggt aag gtg gga tct tct cgg tgg tta gaa atc	632
Arg Lys Ile Cys Asn Gly Lys Val Gly Ser Ser Arg Trp Leu Glu Ile	
180 185 190	
cat gct tat tgg cac aaa tta ggc aaa atg agt aac gct acc atg ctt	680
His Ala Tyr Trp His Lys Leu Gly Lys Met Ser Asn Ala Thr Met Leu	
195 200 205 210	
ttt ggg cat att gaa aat aaa atc cat cgc atc gat cac atg cta aga	728
Phe Gly His Ile Glu Asn Lys Ile His Arg Ile Asp His Met Leu Arg	
215 220 225	

atc aaa aaa atc caa agc cct aaa aat caa gta gaa aac aaa gaa ggg 776
 Ile Lys Lys Ile Gln Ser Pro Lys Asn Gln Val Glu Asn Lys Glu Gly
 230 235 240

ggt ttt aac gct ttt atc ccc ttg ttg tat caa aaa gaa aac aat tat 824
 Gly Phe Asn Ala Phe Ile Pro Leu Leu Tyr Gln Lys Glu Asn Asn Tyr
 245 250 255

ttg aat gtg gaa aaa tcc ccc agt gcg ata gaa atc tta aaa acc atc 872
 Leu Asn Val Glu Lys Ser Pro Ser Ala Ile Glu Ile Leu Lys Thr Ile
 260 265 270

gcc ata tct cgc att ctt tta aac aat atc cct cac att aaa gct tat 920
 Ala Ile Ser Arg Ile Leu Leu Asn Asn Ile Pro His Ile Lys Ala Tyr
 275 280 285 290

tgg gcg act ttg ggc ttg aat ttg gct tta gtg gct caa gaa ttt ggc 968
 Trp Ala Thr Leu Gly Leu Asn Leu Ala Leu Val Ala Gln Glu Phe Gly
 295 300 305

gct aac gat tta gac ggc acg ata gag ata gag agc att caa agc gcg 1016
 Ala Asn Asp Leu Asp Gly Thr Ile Glu Ile Glu Ser Ile Gln Ser Ala
 310 315 320

gca ggc gca aag agc cgg cat ggt tta gaa aaa gaa gat ttg ata ttt 1064
 Ala Gly Ala Lys Ser Arg His Gly Leu Glu Lys Glu Asp Leu Ile Phe
 325 330 335

aaa atc aag gac gct ggt ttt gtt gcg gta gaa agg gat agt ttg tat 1112
 Lys Ile Lys Asp Ala Gly Phe Val Ala Val Glu Arg Asp Ser Leu Tyr
 340 345 350

aat ttt ata cag aaa ttt taataatttt tagcgttttt aagaatgatt 1160
 Asn Phe Ile Gln Lys Phe
 355 360

agttataata acgctactaa caa 1183

<210> 24
 <211> 360
 <212> PRT
 <213> Helicobacter pylori

<400> 24
 Met Asp Phe Leu Glu Lys Val Leu Asp Asn Gln Val Thr Glu Ser Lys
 1 5 10 15
 Glu Leu Val Arg Leu Tyr Asp Tyr Asp Leu Tyr Thr Leu Gly Glu Val
 20 25 30
 Ala Asp Arg Met Arg Gln Asn Met His Gln Lys Ile Val Tyr Phe Asn
 35 40 45
 Val Asn Arg His Leu Asn Pro Ser Asn Ile Cys Ala Asp Ala Cys Lys
 50 55 60
 Phe Cys Ala Phe Ser Ala His Arg Lys Asn Pro Asn Pro Tyr Glu Met
 65 70 75 80

Ser	Leu	Glu	Glu	Ile	Leu	Glu	Lys	Val	Lys	Asn	Ser	Tyr	Asn	Lys	Gly	
				85					90					95		
Ile	Lys	Glu	Val	His	Ile	Val	Ser	Ala	His	Asn	Pro	Asn	Tyr	Ser	Tyr	
			100					105					110			
Glu	Trp	Tyr	Leu	Lys	Val	Phe	Glu	Thr	Ile	Lys	Gln	Glu	Met	Pro	Asn	
		115					120					125				
Leu	His	Leu	Lys	Ala	Met	Thr	Ala	Ala	Glu	Val	His	Phe	Leu	Ser	Val	
	130					135					140					
Lys	Phe	Asn	Lys	Pro	Phe	Glu	Leu	Val	Leu	Glu	Asp	Met	Leu	Lys	Ala	
145					150					155					160	
Gly	Val	Asp	Ser	Met	Pro	Gly	Gly	Gly	Ala	Glu	Ile	Phe	Asp	Glu	Glu	
			165					170					175			
Ile	Arg	Arg	Lys	Ile	Cys	Asn	Gly	Lys	Val	Gly	Ser	Ser	Arg	Trp	Leu	
			180					185					190			
Glu	Ile	His	Ala	Tyr	Trp	His	Lys	Leu	Gly	Lys	Met	Ser	Asn	Ala	Thr	
	195						200					205				
Met	Leu	Phe	Gly	His	Ile	Glu	Asn	Lys	Ile	His	Arg	Ile	Asp	His	Met	
	210					215					220					
Leu	Arg	Ile	Lys	Lys	Ile	Gln	Ser	Pro	Lys	Asn	Gln	Val	Glu	Asn	Lys	
225					230					235					240	
Glu	Gly	Gly	Phe	Asn	Ala	Phe	Ile	Pro	Leu	Leu	Tyr	Gln	Lys	Glu	Asn	
			245					250					255			
Asn	Tyr	Leu	Asn	Val	Glu	Lys	Ser	Pro	Ser	Ala	Ile	Glu	Ile	Leu	Lys	
		260						265					270			
Thr	Ile	Ala	Ile	Ser	Arg	Ile	Leu	Leu	Asn	Asn	Ile	Pro	His	Ile	Lys	
	275						280					285				
Ala	Tyr	Trp	Ala	Thr	Leu	Gly	Leu	Asn	Leu	Ala	Leu	Val	Ala	Gln	Glu	
	290					295				300						
Phe	Gly	Ala	Asn	Asp	Leu	Asp	Gly	Thr	Ile	Glu	Ile	Glu	Ser	Ile	Gln	
305					310					315					320	
Ser	Ala	Ala	Gly	Ala	Lys	Ser	Arg	His	Gly	Leu	Glu	Lys	Glu	Asp	Leu	
			325					330					335			
Ile	Phe	Lys	Ile	Lys	Asp	Ala	Gly	Phe	Val	Ala	Val	Glu	Arg	Asp	Ser	
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 <212> DNA
 <213> Helicobacter pylori

<220>
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 <222> (51)...(563)

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						Val	Glu									
							1									
aaa tta cct aaa aaa cga gtt tct aaa acc aaa tca caa aaa ctt atc															104	
Lys	Leu	Pro	Lys	Lys	Arg	Val	Ser	Lys	Thr	Lys	Ser	Gln	Lys	Leu	Ile	
		5						10					15			

cat agc tta acc acc caa aaa aac aga gcc ttt ctc aaa aaa atc agc 152
His Ser Leu Thr Thr Gln Lys Asn Arg Ala Phe Leu Lys Lys Ile Ser
20 25 30
gct aat gaa atg ctt tta gaa tta gaa aaa ggg gcg ttt aaa aaa aat 200
Ala Asn Glu Met Leu Leu Glu Leu Glu Lys Gly Ala Phe Lys Lys Asn
35 40 45 50
gaa gct tat ttt att tct gat gaa gaa gat aaa aat tat gtt ttg gtg 248
Glu Ala Tyr Phe Ile Ser Asp Glu Glu Asp Lys Asn Tyr Val Leu Val
55 60 65
cca gat aac gtg atc tct ctt ttg gca gaa aac gcc aga aag gct ttt 296
Pro Asp Asn Val Ile Ser Leu Leu Ala Glu Asn Ala Arg Lys Ala Phe
70 75 80
gaa gcc agg ctt agg gcg gaa tta gaa agg gat att atc acc caa gcg 344
Glu Ala Arg Leu Arg Ala Glu Leu Glu Arg Asp Ile Ile Thr Gln Ala
85 90 95
ccg att gat ttt gaa gac gtg cgc gaa gtt tcc ttg caa cta ttg gaa 392
Pro Ile Asp Phe Glu Asp Val Arg Glu Val Ser Leu Gln Leu Leu Glu
100 105 110
aat tta cgc caa aaa gat ggg aat ttg cct aat atc aac acc tta aac 440
Asn Leu Arg Gln Lys Asp Gly Asn Leu Pro Asn Ile Asn Thr Leu Asn
115 120 125 130
ttt gtc aaa caa atc aaa aaa gaa cac cct aat tta ttc ttt aat ttt 488
Phe Val Lys Gln Ile Lys Lys Glu His Pro Asn Leu Phe Phe Asn Phe
135 140 145
gac aac atg ttc aaa caa ccc cct ttt aat gag aat aat ttt gaa aat 536
Asp Asn Met Phe Lys Gln Pro Pro Phe Asn Glu Asn Asn Phe Glu Asn
150 155 160
ttt gac aat agc gat gag gaa aat ttt taatgcaaac cattgatttt 583
Phe Asp Asn Ser Asp Glu Glu Asn Phe
165 170
gaaaaatttt cacaatatcc caagcccggc cca 616

<210> 26

<211> 171

<212> PRT

<213> *Helicobacter pylori*

<400> 26

Val Glu Lys Leu Pro Lys Lys Arg Val Ser Lys Thr Lys Ser Gln Lys
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20 25 30
Ile Ser Ala Asn Glu Met Leu Leu Glu Leu Glu Lys Gly Ala Phe Lys
35 40 45

Lys Asn Glu Ala Tyr Phe Ile Ser Asp Glu Glu Asp Lys Asn Tyr Val
 50 55 60
 Leu Val Pro Asp Asn Val Ile Ser Leu Leu Ala Glu Asn Ala Arg Lys
 65 70 75 80
 Ala Phe Glu Ala Arg Leu Arg Ala Glu Leu Glu Arg Asp Ile Ile Thr
 85 90 95
 Gln Ala Pro Ile Asp Phe Glu Asp Val Arg Glu Val Ser Leu Gln Leu
 100 105 110
 Leu Glu Asn Leu Arg Gln Lys Asp Gly Asn Leu Pro Asn Ile Asn Thr
 115 120 125
 Leu Asn Phe Val Lys Gln Ile Lys Lys Glu His Pro Asn Leu Phe Phe
 130 135 140
 Asn Phe Asp Asn Met Phe Lys Gln Pro Pro Phe Asn Glu Asn Asn Phe
 145 150 155 160
 Glu Asn Phe Asp Asn Ser Asp Glu Glu Asn Phe
 165 170

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<220>
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<400> 27
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 Met Asn
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 gaa aat att aat gaa aat att ttt gaa gaa gta ggg gac gct tgc gtt 104
 Glu Asn Ile Asn Glu Asn Ile Phe Glu Glu Val Gly Asp Ala Cys Val
 5 10 15

 aaa tgc gct aag tgc gtg cca ggc tgc acc ata tac cgc att cat aaa 152
 Lys Cys Ala Lys Cys Val Pro Gly Cys Thr Ile Tyr Arg Ile His Lys
 20 25 30

 gac gag gcg act tcg cct aga ggc ttt tta gat ttg atg cgc tta aac 200
 Asp Glu Ala Thr Ser Pro Arg Gly Phe Leu Asp Leu Met Arg Leu Asn
 35 40 45 50

 gct caa aac aag ctc caa tta gac acg aat tta aaa cac ctt tta gaa 248
 Ala Gln Asn Lys Leu Gln Leu Asp Thr Asn Leu Lys His Leu Leu Glu
 55 60 65

 act tgc ttt tta tgc acc gct tgc gtg gaa att tgc cct ttt cat ttg 296
 Thr Cys Phe Leu Cys Thr Ala Cys Val Glu Ile Cys Pro Phe His Leu
 70 75 80

 ccc ata gac acc tta ata gaa aaa gcc aga gaa aaa atc gct caa aag 344
 Pro Ile Asp Thr Leu Ile Glu Lys Ala Arg Glu Lys Ile Ala Gln Lys
 85 90 95

cat ggc atc gct tgg tat aaa aaa tcc tat ttt tcc ctt tta aaa aac	392
His Gly Ile Ala Trp Tyr Lys Lys Ser Tyr Phe Ser Leu Leu Lys Asn	
100 105 110	
cgc aaa aaa atg gat agg gtg ttt tca act gcg cat ttt tta gcc cct	440
Arg Lys Lys Met Asp Arg Val Phe Ser Thr Ala His Phe Leu Ala Pro	
115 120 125 130	
tgc gtt ttc aag caa gta ggg gat agt tta gag cct agg gcg gtg ttt	488
Cys Val Phe Lys Gln Val Gly Asp Ser Leu Glu Pro Arg Ala Val Phe	
135 140 145	
aaa ggt ttg ttc aaa cgc ttt aaa aaa agc gcg ctg cct cct tta aat	536
Lys Gly Leu Phe Lys Arg Phe Lys Lys Ser Ala Leu Pro Pro Leu Asn	
150 155 160	
caa aaa agt ttt tta caa aag cat gca gaa atg aag ctt tta gaa aac	584
Gln Lys Ser Phe Leu Gln Lys His Ala Glu Met Lys Leu Leu Glu Asn	
165 170 175	
ccc att caa aaa gtg gcc att ttt ata ggg tgc ttg agc aat tac cat	632
Pro Ile Gln Lys Val Ala Ile Phe Ile Gly Cys Leu Ser Asn Tyr His	
180 185 190	
tac cag caa gtg ggg gaa agc ttg ttg tat att tta gaa aaa ctc aac	680
Tyr Gln Gln Val Gly Glu Ser Leu Leu Tyr Ile Leu Glu Lys Leu Asn	
195 200 205 210	
att caa gcg atc atc cct aag caa gaa tgc tgc tca gcg cct gcg tat	728
Ile Gln Ala Ile Ile Pro Lys Gln Glu Cys Cys Ser Ala Pro Ala Tyr	
215 220 225	
ttt acc ggc gat aaa gac acc acg ctt ttt tta gtg aaa aaa aac ata	776
Phe Thr Gly Asp Lys Asp Thr Thr Leu Phe Leu Val Lys Lys Asn Ile	
230 235 240	
gaa tgg ttt gaa agc tat tta gat aaa gtg gat gcg atc att gtg cct	824
Glu Trp Phe Glu Ser Tyr Leu Asp Lys Val Asp Ala Ile Ile Val Pro	
245 250 255	
gaa gcc aca tgc gct aca tgc tca tca acg att att aca agg tgt ttt	872
Glu Ala Thr Cys Ala Thr Cys Ser Ser Thr Ile Ile Thr Arg Cys Phe	
260 265 270	
tgg gcg aaa aag ata agg att tgt atg tgaagcgctt ggaaaaaatc	919
Trp Ala Lys Lys Ile Arg Ile Cys Met	
275 280	
acgcctaaaa tctatctggc gagcgtgttt tta	952
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<211> 283	
<212> PRT	
<213> Helicobacter pylori	

<400> 28
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Cys Val Lys Cys Ala Lys Cys Val Pro Gly Cys Thr Ile Tyr Arg Ile
20 25 30
His Lys Asp Glu Ala Thr Ser Pro Arg Gly Phe Leu Asp Leu Met Arg
35 40 45
Leu Asn Ala Gln Asn Lys Leu Gln Leu Asp Thr Asn Leu Lys His Leu
50 55 60
Leu Glu Thr Cys Phe Leu Cys Thr Ala Cys Val Glu Ile Cys Pro Phe
65 70 75 80
His Leu Pro Ile Asp Thr Leu Ile Glu Lys Ala Arg Glu Lys Ile Ala
85 90 95
Gln Lys His Gly Ile Ala Trp Tyr Lys Lys Ser Tyr Phe Ser Leu Leu
100 105 110
Lys Asn Arg Lys Lys Met Asp Arg Val Phe Ser Thr Ala His Phe Leu
115 120 125
Ala Pro Cys Val Phe Lys Gln Val Gly Asp Ser Leu Glu Pro Arg Ala
130 135 140
Val Phe Lys Gly Leu Phe Lys Arg Phe Lys Lys Ser Ala Leu Pro Pro
145 150 155 160
Leu Asn Gln Lys Ser Phe Leu Gln Lys His Ala Glu Met Lys Leu Leu
165 170 175
Glu Asn Pro Ile Gln Lys Val Ala Ile Phe Ile Gly Cys Leu Ser Asn
180 185 190
Tyr His Tyr Gln Gln Val Gly Glu Ser Leu Leu Tyr Ile Leu Glu Lys
195 200 205
Leu Asn Ile Gln Ala Ile Ile Pro Lys Gln Glu Cys Cys Ser Ala Pro
210 215 220
Ala Tyr Phe Thr Gly Asp Lys Asp Thr Thr Leu Phe Leu Val Lys Lys
225 230 235 240
Asn Ile Glu Trp Phe Glu Ser Tyr Leu Asp Lys Val Asp Ala Ile Ile
245 250 255
Val Pro Glu Ala Thr Cys Ala Thr Cys Ser Ser Thr Ile Ile Thr Arg
260 265 270
Cys Phe Trp Ala Lys Lys Ile Arg Ile Cys Met
275 280

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<211> 1361
<212> DNA
<213> Helicobacter pylori

<220>
<221> CDS
<222> (49)...(1305)

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Met Lys Glu
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caa tca atg att gat ttt tta aaa ctt aga gat tat gac att aga aaa 105
Gln Ser Met Ile Asp Phe Leu Lys Leu Arg Asp Tyr Asp Ile Arg Lys

5	10	15	
aca caa aat gcg cga tgg ata gat caa aaa tgc acc cct gat gtg ttg	153		
Thr Gln Asn Ala Arg Trp Ile Asp Gln Lys Cys Thr Pro Asp Val Leu			
20 25 30 35			
tct ctt gtt gct gat tgt att tta gag ttt acg caa tgt aat att gga	201		
Ser Leu Val Ala Asp Cys Ile Leu Glu Phe Thr Gln Cys Asn Ile Gly			
40 45 50			
aaa tca ttt tct att agg gat att tgg gat agc cct tac acc aat gaa	249		
Lys Ser Phe Ser Ile Arg Asp Ile Trp Asp Ser Pro Tyr Thr Asn Glu			
55 60 65			
aat gtt aaa atg att ttt tct aaa cct gat tta aat tct gac ttt tcc	297		
Asn Val Lys Met Ile Phe Ser Lys Pro Asp Leu Asn Ser Asp Phe Ser			
70 75 80			
atg cat gaa tac gat aag ttt ttt tct cag cct att aaa tta tta gcc	345		
Met His Glu Tyr Asp Lys Phe Phe Ser Gln Pro Ile Lys Leu Leu Ala			
85 90 95			
tat agc ggt att tta ttt gaa aca aaa act ggc aat aga aat att tat	393		
Tyr Ser Gly Ile Leu Phe Glu Thr Lys Thr Gly Asn Arg Asn Ile Tyr			
100 105 110 115			
acc ata caa aac ata gag cta tta gaa tat ctc atg caa aga gaa aca	441		
Thr Ile Gln Asn Ile Glu Leu Leu Glu Tyr Leu Met Gln Arg Glu Thr			
120 125 130			
aac gct ttg aaa ttc ctt att tta tat att caa aag gta tta atg gat	489		
Asn Ala Leu Lys Phe Leu Ile Leu Tyr Ile Gln Lys Val Leu Met Asp			
135 140 145			
agt ggg att tat cct tta ttt gac aac ttt tta caa aaa caa gac aca	537		
Ser Gly Ile Tyr Pro Leu Phe Asp Asn Phe Leu Gln Lys Gln Asp Thr			
150 155 160			
gaa agt ttt aag caa cta aaa gat ggt ttc act cat ttt act atc aat	585		
Glu Ser Phe Lys Gln Leu Lys Asp Gly Phe Thr His Phe Thr Ile Asn			
165 170 175			
aac aca gca atc aat aac gct acg gaa tgt ttt agg att ttt act aaa	633		
Asn Thr Ala Ile Asn Asn Ala Thr Glu Cys Phe Arg Ile Phe Thr Lys			
180 185 190 195			
att atc aat cct tta gct ttt tat tat ggt aaa aaa ggc aca aga aaa	681		
Ile Ile Asn Pro Leu Ala Phe Tyr Tyr Gly Lys Lys Gly Thr Arg Lys			
200 205 210			
ggg tat ttg tcc aac act ata att aca aaa gat gag ctt aat tat aat	729		
Gly Tyr Leu Ser Asn Thr Ile Ile Thr Lys Asp Glu Leu Asn Tyr Asn			
215 220 225			
cgt atc aat tgg cga gat ata gga aaa gat aaa aat acc acc aga caa	777		

Arg	Ile	Asn	Trp	Arg	Asp	Ile	Gly	Lys	Asp	Lys	Asn	Thr	Thr	Arg	Gln	
		230					235					240				
gaa	tac	gat	ctt	ata	aac	tct	aaa	agg	att	gct	aat	tct	aac	tat	ctt	825
Glu	Tyr	Asp	Leu	Ile	Asn	Ser	Lys	Arg	Ile	Ala	Asn	Ser	Asn	Tyr	Leu	
	245					250					255					
att	tca	aaa	gct	aag	aaa	gtg	gtg	aaa	cga	tat	aat	gat	aga	ttt	aat	873
Ile	Ser	Lys	Ala	Lys	Lys	Val	Val	Lys	Arg	Tyr	Asn	Asp	Arg	Phe	Asn	
260					265					270					275	
aat	tct	ctc	tct	gaa	gta	aaa	caa	gaa	aaa	gaa	gag	tcg	caa	gcc	aca	921
Asn	Ser	Leu	Ser	Glu	Val	Lys	Gln	Glu	Lys	Glu	Glu	Ser	Gln	Ala	Thr	
				280					285					290		
caa	ata	cac	cat	att	ttt	ccc	atc	caa	gac	ttt	ccc	att	att	gct	aac	969
Gln	Ile	His	His	Ile	Phe	Pro	Ile	Gln	Asp	Phe	Pro	Ile	Ile	Ala	Asn	
		295						300					305			
tat	ata	gag	aat	ctt	atc	gca	ctc	act	cct	aat	caa	cat	ttt	att	tac	1017
Tyr	Ile	Glu	Asn	Leu	Ile	Ala	Leu	Thr	Pro	Asn	Gln	His	Phe	Ile	Tyr	
	310					315						320				
gcc	cac	cct	aat	aat	caa	acc	cgc	ttg	att	gat	aaa	gat	ttt	caa	tat	1065
Ala	His	Pro	Asn	Asn	Gln	Thr	Arg	Leu	Ile	Asp	Lys	Asp	Phe	Gln	Tyr	
	325					330					335					
atc	tgc	tta	tta	gct	aaa	acg	acc	aca	att	ctt	aat	gac	act	caa	ggc	1113
Ile	Cys	Leu	Leu	Ala	Lys	Thr	Thr	Thr	Ile	Leu	Asn	Asp	Thr	Gln	Gly	
340				345					350					355		
gta	tat	gat	tgg	aat	gat	tat	att	gtt	gtg	ttg	aat	atg	ggc	ctc	aaa	1161
Val	Tyr	Asp	Trp	Asn	Asp	Tyr	Ile	Val	Val	Leu	Asn	Met	Gly	Leu	Lys	
				360					365					370		
aca	act	atc	ttt	tct	caa	gtc	aag	aac	gaa	tgg	gaa	tta	tta	aaa	gta	1209
Thr	Thr	Ile	Phe	Ser	Gln	Val	Lys	Asn	Glu	Trp	Glu	Leu	Leu	Lys	Val	
		375						380					385			
ata	gat	gct	ttt	tat	ttt	gat	ttt	aac	aag	agc	aaa	gat	cca	agt	tgg	1257
Ile	Asp	Ala	Phe	Tyr	Phe	Asp	Phe	Asn	Lys	Ser	Lys	Asp	Pro	Ser	Trp	
		390				395						400				
tca	tac	ttg	cta	gat	aaa	aac	gat	tta	aga	gct	ttc	aag	cta	aaa	ttt	1305
Ser	Tyr	Leu	Leu	Asp	Lys	Asn	Asp	Leu	Arg	Ala	Phe	Lys	Leu	Lys	Phe	
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<211> 419

<212> PRT

<213> Helicobacter pylori

<400> 30

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			20					25					30			
Asp	Val	Leu	Ser	Leu	Val	Ala	Asp	Cys	Ile	Leu	Glu	Phe	Thr	Gln	Cys	
		35					40					45				
Asn	Ile	Gly	Lys	Ser	Phe	Ser	Ile	Arg	Asp	Ile	Trp	Asp	Ser	Pro	Tyr	
	50					55					60					
Thr	Asn	Glu	Asn	Val	Lys	Met	Ile	Phe	Ser	Lys	Pro	Asp	Leu	Asn	Ser	
65					70					75					80	
Asp	Phe	Ser	Met	His	Glu	Tyr	Asp	Lys	Phe	Phe	Ser	Gln	Pro	Ile	Lys	
				85					90					95		
Leu	Leu	Ala	Tyr	Ser	Gly	Ile	Leu	Phe	Glu	Thr	Lys	Thr	Gly	Asn	Arg	
			100					105					110			
Asn	Ile	Tyr	Thr	Ile	Gln	Asn	Ile	Glu	Leu	Leu	Glu	Tyr	Leu	Met	Gln	
		115					120					125				
Arg	Glu	Thr	Asn	Ala	Leu	Lys	Phe	Leu	Ile	Leu	Tyr	Ile	Gln	Lys	Val	
	130					135					140					
Leu	Met	Asp	Ser	Gly	Ile	Tyr	Pro	Leu	Phe	Asp	Asn	Phe	Leu	Gln	Lys	
145					150					155					160	
Gln	Asp	Thr	Glu	Ser	Phe	Lys	Gln	Leu	Lys	Asp	Gly	Phe	Thr	His	Phe	
				165					170					175		
Thr	Ile	Asn	Asn	Thr	Ala	Ile	Asn	Asn	Ala	Thr	Glu	Cys	Phe	Arg	Ile	
		180						185					190			
Phe	Thr	Lys	Ile	Ile	Asn	Pro	Leu	Ala	Phe	Tyr	Tyr	Gly	Lys	Lys	Gly	
	195					200						205				
Thr	Arg	Lys	Gly	Tyr	Leu	Ser	Asn	Thr	Ile	Ile	Thr	Lys	Asp	Glu	Leu	
	210					215					220					
Asn	Tyr	Asn	Arg	Ile	Asn	Trp	Arg	Asp	Ile	Gly	Lys	Asp	Lys	Asn	Thr	
225				230						235					240	
Thr	Arg	Gln	Glu	Tyr	Asp	Leu	Ile	Asn	Ser	Lys	Arg	Ile	Ala	Asn	Ser	
				245					250					255		
Asn	Tyr	Leu	Ile	Ser	Lys	Ala	Lys	Lys	Val	Val	Lys	Arg	Tyr	Asn	Asp	
		260					265						270			
Arg	Phe	Asn	Asn	Ser	Leu	Ser	Glu	Val	Lys	Gln	Glu	Lys	Glu	Glu	Ser	
	275						280					285				
Gln	Ala	Thr	Gln	Ile	His	His	Ile	Phe	Pro	Ile	Gln	Asp	Phe	Pro	Ile	
	290					295					300					
Ile	Ala	Asn	Tyr	Ile	Glu	Asn	Leu	Ile	Ala	Leu	Thr	Pro	Asn	Gln	His	
305					310					315					320	
Phe	Ile	Tyr	Ala	His	Pro	Asn	Asn	Gln	Thr	Arg	Leu	Ile	Asp	Lys	Asp	
			325						330					335		
Phe	Gln	Tyr	Ile	Cys	Leu	Leu	Ala	Lys	Thr	Thr	Thr	Ile	Leu	Asn	Asp	
		340						345					350			
Thr	Gln	Gly	Val	Tyr	Asp	Trp	Asn	Asp	Tyr	Ile	Val	Val	Leu	Asn	Met	
	355					360					365					
Gly	Leu	Lys	Thr	Thr	Ile	Phe	Ser	Gln	Val	Lys	Asn	Glu	Trp	Glu	Leu	
	370				375						380					
Leu	Lys	Val	Ile	Asp	Ala	Phe	Tyr	Phe	Asp	Phe	Asn	Lys	Ser	Lys	Asp	
385				390						395					400	
Pro	Ser	Trp	Ser	Tyr	Leu	Leu	Asp	Lys	Asn	Asp	Leu	Arg	Ala	Phe	Lys	
				405					410					415		
Leu	Lys	Phe														

<210> 31
 <211> 763
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 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (53)...(709)

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 Phe Ala Met Ile Gly Ser Gly Gly Phe Ile Ala Pro Lys His Leu Gln
 5 10 15

gcg att aga gat aca ggg cat ttt ttg gat tgc tct ttt gat att cat 154
 Ala Ile Arg Asp Thr Gly His Phe Leu Asp Cys Ser Phe Asp Ile His
 20 25 30

gat agc gtg ggg gtt tta gat gag tat ttc gcg caa tca gag ttt ttt 202
 Asp Ser Val Gly Val Leu Asp Glu Tyr Phe Ala Gln Ser Glu Phe Phe
 35 40 45 50

acg aat att gaa gat ttt gaa aag cat tta gag caa tct aag gat atg 250
 Thr Asn Ile Glu Asp Phe Glu Lys His Leu Glu Gln Ser Lys Asp Met
 55 60 65

ggg aaa gaa atc aac tat ttg agt gtt tgc acg cct acg cac acg cat 298
 Gly Lys Glu Ile Asn Tyr Leu Ser Val Cys Thr Pro Thr His Thr His
 70 75 80

ttt gat cac atc cgt ttc ggg tta aga aac ggc atg cat gtg att tgt 346
 Phe Asp His Ile Arg Phe Gly Leu Arg Asn Gly Met His Val Ile Cys
 85 90 95

gaa aaa ccc tta gtt tta gac cct ggc gaa ata caa gaa ttg aaa gat 394
 Glu Lys Pro Leu Val Leu Asp Pro Gly Glu Ile Gln Glu Leu Lys Asp
 100 105 110

tta gag gtg aaa cac caa aaa agg gtg ttt agt ctt tta ccc ttg cgc 442
 Leu Glu Val Lys His Gln Lys Arg Val Phe Ser Leu Leu Pro Leu Arg
 115 120 125 130

ttg cat tgc gac acg ctg gct ttg aaa gaa aaa att aag agc gaa tta 490
 Leu His Cys Asp Thr Leu Ala Leu Lys Glu Lys Ile Lys Ser Glu Leu
 135 140 145

gac aaa aac cct agc aag gtg ttt gac atc acg ctc act tat atc agc 538
 Asp Lys Asn Pro Ser Lys Val Phe Asp Ile Thr Leu Thr Tyr Ile Ser
 150 155 160

gtt caa ggg aaa tgg tat ttt tct tca tgg cga gcg gat gtg aat agg 586

Val	Gln	Gly	Lys	Trp	Tyr	Phe	Ser	Ser	Trp	Arg	Ala	Asp	Val	Asn	Arg		
		165					170					175					
agc	gga	ggg	tta	gcc	act	caa	atg	ggg	gtg	aat	att	ttt	gac	act	tta	634	
Ser	Gly	Gly	Leu	Ala	Thr	Gln	Met	Gly	Val	Asn	Ile	Phe	Asp	Thr	Leu		
		180				185				190							
atc	tat	ttg	ttt	gga	agc	ggt	aaa	gac	aag	ggt	atc	aat	aaa	gaa	gag	682	
Ile	Tyr	Leu	Phe	Gly	Ser	Val	Lys	Asp	Lys	Val	Ile	Asn	Lys	Glu	Glu		
		195			200				205					210			
cct	gat	tgc	gta	ggg	gga	tac	tct	ttt	tagag	catgc	caaaataaga					729	
Pro	Asp	Cys	Val	Gly	Gly	Tyr	Ser	Phe									
				215													
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 <212> PRT
 <213> Helicobacter pylori

<400> 32

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Leu	Gln	Ala	Ile	Arg	Asp	Thr	Gly	His	Phe	Leu	Asp	Cys	Ser	Phe	Asp		
		20					25					30					
Ile	His	Asp	Ser	Val	Gly	Val	Leu	Asp	Glu	Tyr	Phe	Ala	Gln	Ser	Glu		
		35				40					45						
Phe	Phe	Thr	Asn	Ile	Glu	Asp	Phe	Glu	Lys	His	Leu	Glu	Gln	Ser	Lys		
	50				55					60							
Asp	Met	Gly	Lys	Glu	Ile	Asn	Tyr	Leu	Ser	Val	Cys	Thr	Pro	Thr	His		
65				70					75					80			
Thr	His	Phe	Asp	His	Ile	Arg	Phe	Gly	Leu	Arg	Asn	Gly	Met	His	Val		
			85					90					95				
Ile	Cys	Glu	Lys	Pro	Leu	Val	Leu	Asp	Pro	Gly	Glu	Ile	Gln	Glu	Leu		
		100					105					110					
Lys	Asp	Leu	Glu	Val	Lys	His	Gln	Lys	Arg	Val	Phe	Ser	Leu	Leu	Pro		
	115				120					125							
Leu	Arg	Leu	His	Cys	Asp	Thr	Leu	Ala	Leu	Lys	Glu	Lys	Ile	Lys	Ser		
	130				135					140							
Glu	Leu	Asp	Lys	Asn	Pro	Ser	Lys	Val	Phe	Asp	Ile	Thr	Leu	Thr	Tyr		
145				150					155					160			
Ile	Ser	Val	Gln	Gly	Lys	Trp	Tyr	Phe	Ser	Trp	Arg	Ala	Asp	Val			
		165						170					175				
Asn	Arg	Ser	Gly	Gly	Leu	Ala	Thr	Gln	Met	Gly	Val	Asn	Ile	Phe	Asp		
		180					185					190					
Thr	Leu	Ile	Tyr	Leu	Phe	Gly	Ser	Val	Lys	Asp	Lys	Val	Ile	Asn	Lys		
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 <211> 1465

<212> DNA
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 Met Phe
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 Leu Leu Arg His Leu Thr Ser Ala Cys Val Phe Leu Ala Ser Lys Cys
 5 10 15

ttg ccg gac tcc ttt gtc ttg gtc gct ctt tta tcg ttt gtc gtg ttt 152
 Leu Pro Asp Ser Phe Val Leu Val Ala Leu Leu Ser Phe Val Val Phe
 20 25 30

gtt ctt gtt tat tgc ttg aca ggg caa gac gct ttt tct gtc att tct 200
 Val Leu Val Tyr Cys Leu Thr Gly Gln Asp Ala Phe Ser Val Ile Ser
 35 40 45 50

agt tgg ggg aat ggc gct tgg acg ctt tta ggt ttt tct atg caa atg 248
 Ser Trp Gly Asn Gly Ala Trp Thr Leu Leu Gly Phe Ser Met Gln Met
 55 60 65

gcc ctt att ttg gtg ttg ggt cag gct ctg gct aac gct aaa tta gtc 296
 Ala Leu Ile Leu Val Leu Gly Gln Ala Leu Ala Asn Ala Lys Leu Val
 70 75 80

caa aag ctt tta aaa tat cta gcg tct tta cct aaa ggg tat tat acg 344
 Gln Lys Leu Leu Lys Tyr Leu Ala Ser Leu Pro Lys Gly Tyr Tyr Thr
 85 90 95

gct tta tgg ttg gtt act ttt tta tcg tta atc gct aat tgg atc aac 392
 Ala Leu Trp Leu Val Thr Phe Leu Ser Leu Ile Ala Asn Trp Ile Asn
 100 105 110

tgg ggt ttt ggc ttg gtg att agt gcg att ttt gca aaa gag atc gcc 440
 Trp Gly Phe Gly Leu Val Ile Ser Ala Ile Phe Ala Lys Glu Ile Ala
 115 120 125 130

aaa aat gtt aag ggg gtg gat tac agg ctg ctc att gct agc gct tat 488
 Lys Asn Val Lys Gly Val Asp Tyr Arg Leu Leu Ile Ala Ser Ala Tyr
 135 140 145

tcg ggt ttt gtc atc tgg cat ggg ggt tta tca ggc tct atc cct tta 536
 Ser Gly Phe Val Ile Trp His Gly Gly Leu Ser Gly Ser Ile Pro Leu
 150 155 160

agc gtt gcc acc caa aat gaa aat cta tcc aaa ata agc gct ggg gtg	584
Ser Val Ala Thr Gln Asn Glu Asn Leu Ser Lys Ile Ser Ala Gly Val	
165 170 175	
att gaa aaa gct atc cct atc agt cag acg att ttt tct tct tat aat	632
Ile Glu Lys Ala Ile Pro Ile Ser Gln Thr Ile Phe Ser Ser Tyr Asn	
180 185 190	
tta atc att ata ggg atc att ctt gta ggg tta ccc ttt tta atg gca	680
Leu Ile Ile Ile Gly Ile Ile Leu Val Gly Leu Pro Phe Leu Met Ala	
195 200 205 210	
atg atc cac cct aaa aaa gaa gaa atc gtt gag att gat tca aag ctt	728
Met Ile His Pro Lys Lys Glu Glu Ile Val Glu Ile Asp Ser Lys Leu	
215 220 225	
tta aaa gac gag tac aaa gag att gaa ctc att agc cac caa caa gac	776
Leu Lys Asp Glu Tyr Lys Glu Ile Glu Leu Ile Ser His Gln Gln Asp	
230 235 240	
aaa acg atc gcg cat ttt ttg gaa aac agc gct ttg ctt tct tat ctt	824
Lys Thr Ile Ala His Phe Leu Glu Asn Ser Ala Leu Leu Ser Tyr Leu	
245 250 255	
ttg gtt ttt ttg ggt ttt ggg tat ctt ggt gtt tat ttt ttt aaa ggg	872
Leu Val Phe Leu Gly Phe Gly Tyr Leu Gly Val Tyr Phe Phe Lys Gly	
260 265 270	
gga ggg att agt tta aac att gtc aat acg att ttc ctt ttt tta ggg	920
Gly Gly Ile Ser Leu Asn Ile Val Asn Thr Ile Phe Leu Phe Leu Gly	
275 280 285 290	
att tta ctg cat aaa acc cct tta gct tat gtg aaa gcg atc gat cgt	968
Ile Leu Leu His Lys Thr Pro Leu Ala Tyr Val Lys Ala Ile Asp Arg	
295 300 305	
tcc gct ang agc gtg gct ggg att tta ttg caa ttc cct ttt tac gct	1016
Ser Ala Xaa Ser Val Ala Gly Ile Leu Leu Gln Phe Pro Phe Tyr Ala	
310 315 320	
ggg att atg ggg atg atg gca agc cat agc gtg ggg ggt cat tct tta	1064
Gly Ile Met Gly Met Met Ala Ser His Ser Val Gly Gly His Ser Leu	
325 330 335	
gcg caa atg ctt tct tta gct ttc acg cac atc gct aat gaa aaa act	1112
Ala Gln Met Leu Ser Leu Ala Phe Thr His Ile Ala Asn Glu Lys Thr	
340 345 350	
ttc gtg ctc atg act ttt ttg agc gca ggg att gtc aat att ttt att	1160
Phe Val Leu Met Thr Phe Leu Ser Ala Gly Ile Val Asn Ile Phe Ile	
355 360 365 370	
ccg tct ggc gga ggg caa tgg gcg att caa gct cct atc atg ctt ccg	1208
Pro Ser Gly Gly Gly Gln Trp Ala Ile Gln Ala Pro Ile Met Leu Pro	

375	380	385	
gct ggg caa agc tta ggg gtg gat ccg gga gtg gtt tct atg gct atc			1256
Ala Gly Gln Ser Leu Gly Val Asp Pro Gly Val Val Ser Met Ala Ile			
390	395	400	
gct tgg gga gat gct tgg acg aat atg ata cag cct ttt tgg gct ttg			1304
Ala Trp Gly Asp Ala Trp Thr Asn Met Ile Gln Pro Phe Trp Ala Leu			
405	410	415	
ccc gct tta gcc att gcg ggt ttg ggc gct aaa gat att atg ggc tat			1352
Pro Ala Leu Ala Ile Ala Gly Leu Gly Ala Lys Asp Ile Met Gly Tyr			
420	425	430	
tgc gtt ttg act tta att ttt gta ggc tta gtc gtg tgt ggg gtg ttt			1400
Cys Val Leu Thr Leu Ile Phe Val Gly Leu Val Val Cys Gly Val Phe			
435	440	445	450
tat ttt tta gtg tgagtttttt atgcctaaaa ccatgctctt ttcaatgggg			1452
Tyr Phe Leu Val			
taaggtttttc tct			1465
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<213> Helicobacter pylori			
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Lys Cys Leu Pro Asp Ser Phe Val Leu Val Ala Leu Leu Ser Phe Val			
20 25 30			
Val Phe Val Leu Val Tyr Cys Leu Thr Gly Gln Asp Ala Phe Ser Val			
35 40 45			
Ile Ser Ser Trp Gly Asn Gly Ala Trp Thr Leu Leu Gly Phe Ser Met			
50 55 60			
Gln Met Ala Leu Ile Leu Val Leu Gly Gln Ala Leu Ala Asn Ala Lys			
65 70 75 80			
Leu Val Gln Lys Leu Leu Lys Tyr Leu Ala Ser Leu Pro Lys Gly Tyr			
85 90 95			
Tyr Thr Ala Leu Trp Leu Val Thr Phe Leu Ser Leu Ile Ala Asn Trp			
100 105 110			
Ile Asn Trp Gly Phe Gly Leu Val Ile Ser Ala Ile Phe Ala Lys Glu			
115 120 125			
Ile Ala Lys Asn Val Lys Gly Val Asp Tyr Arg Leu Leu Ile Ala Ser			
130 135 140			
Ala Tyr Ser Gly Phe Val Ile Trp His Gly Gly Leu Ser Gly Ser Ile			
145 150 155 160			

Trp	Met	Val	Val	Ile	Gly	Ala	Leu	Ile	Cys	Met	Leu	Leu	Gly	Val	Phe	
		5					10					15				
atc	ttc	ttc	act	agc	atg	tcg	ggt	aaa	aaa	ttt	tta	agc	gct	tat	ctt	152
Ile	Phe	Phe	Thr	Ser	Met	Ser	Val	Lys	Lys	Phe	Leu	Ser	Ala	Tyr	Leu	
	20					25					30					
aac	gct	tat	ttg	gat	caa	cgc	ccc	cat	att	aag	ggc	atg	ggg	att	gca	200
Asn	Ala	Tyr	Leu	Asp	Gln	Arg	Pro	His	Ile	Lys	Gly	Met	Gly	Ile	Ala	
	35				40					45					50	
ggc	act	ccc	ttt	gaa	tgc	gaa	ggg	ttt	ttt	aaa	atc	gca	tgc	ggt	tct	248
Gly	Thr	Pro	Phe	Glu	Cys	Glu	Gly	Phe	Phe	Lys	Ile	Ala	Cys	Val	Ser	
				55				60						65		
aaa	gag	ctc	agt	ttt	tta	gac	tct	caa	aac	tcc	cct	att	gtg	aat	ttt	296
Lys	Glu	Leu	Ser	Phe	Leu	Asp	Ser	Gln	Asn	Ser	Pro	Ile	Val	Asn	Phe	
			70					75					80			
aaa	aat	ttg	agt	att	aag	ctc	cgt	tct	tta	gat	aaa	agc	tct	ctt	act	344
Lys	Asn	Leu	Ser	Ile	Lys	Leu	Arg	Ser	Leu	Asp	Lys	Ser	Ser	Leu	Thr	
		85					90					95				
ctt	tct	gtc	cat	tct	caa	atc	aaa	tcc	cct	att	tta	gaa	caa	gat	atg	392
Leu	Ser	Val	His	Ser	Gln	Ile	Lys	Ser	Pro	Ile	Leu	Glu	Gln	Asp	Met	
		100				105					110					
cag	caa	aaa	atc	agc	caa	atc	ccc	cta	aaa	gac	ttg	aat	gcc	tta	tta	440
Gln	Gln	Lys	Ile	Ser	Gln	Ile	Pro	Leu	Lys	Asp	Leu	Asn	Ala	Leu	Leu	
	115				120					125					130	
gaa	aaa	atg	aaa	ccc	acg	cgc	ttg	aat	tgc	tct	tta	aca	ttc	aac	gct	488
Glu	Lys	Met	Lys	Pro	Thr	Arg	Leu	Asn	Cys	Ser	Leu	Thr	Phe	Asn	Ala	
				135					140					145		
cta	gat	gaa	aaa	acc	tta	aac	gac	aac	tta	aaa	tgc	gat	ttg	act	aat	536
Leu	Asp	Glu	Lys	Thr	Leu	Asn	Asp	Asn	Leu	Lys	Cys	Asp	Leu	Thr	Asn	
			150					155					160			
gcg	gaa	aat	atc	ctt	gct	tac	act	ttt	ttt	caa	gag	ggg	tta	atg	gag	584
Ala	Glu	Asn	Ile	Leu	Ala	Tyr	Thr	Phe	Phe	Gln	Glu	Gly	Leu	Met	Glu	
		165					170					175				
gct	caa	gaa	aat	cta	tcc	ctt	aaa	aat	att	ttt	aaa	acc	ttg	agt	tct	632
Ala	Gln	Glu	Asn	Leu	Ser	Leu	Lys	Asn	Ile	Phe	Lys	Thr	Leu	Ser	Ser	
		180				185					190					
aaa	gac	gct	aaa	gcc	ata	gaa	gag	ttg	caa	gac	aaa	ctg	cgt	ttt	tca	680
Lys	Asp	Ala	Lys	Ala	Ile	Glu	Glu	Leu	Gln	Asp	Lys	Leu	Arg	Phe	Ser	
	195				200					205					210	
gcg	cca	aag	ttg	ggc	ggt	tct	atc	caa	gcg	cac	cat	ctt	aaa	aac	ctt	728
Ala	Pro	Lys	Leu	Gly	Val	Ser	Ile	Gln	Ala	His	His	Leu	Lys	Asn	Leu	
				215					220					225		

ttg gaa gcc ttt tat cac caa aat aaa gag agt ttg ggc ttt ttt tcc	776
Leu Glu Ala Phe Tyr His Gln Asn Lys Glu Ser Leu Gly Phe Phe Ser	
230 235 240	
cct tat ttt agt ttg cga tct caa acc cct agc gtc tct tat gaa agc	824
Pro Tyr Phe Ser Leu Arg Ser Gln Thr Pro Ser Val Ser Tyr Glu Ser	
245 250 255	
gcg tta gct tct tta gaa aac tat ttt atg gct ttg ttc caa tcc cat	872
Ala Leu Ala Ser Leu Glu Asn Tyr Phe Met Ala Leu Phe Gln Ser His	
260 265 270	
ttt aaa gac gat acc gca ctc caa cag aat ttt aaa gga ttg ttg caa	920
Phe Lys Asp Asp Thr Ala Leu Gln Gln Asn Phe Lys Gly Leu Leu Gln	
275 280 285 290	
gcc ttt gtt tct atg gct aaa gac aaa cga tcc caa atc gct ctt aac	968
Ala Phe Val Ser Met Ala Lys Asp Lys Arg Ser Gln Ile Ala Leu Asn	
295 300 305	
gcc caa gct aaa gac aac gcc aag cta act ttt aac gcc ttg tta gaa	1016
Ala Gln Ala Lys Asp Asn Ala Lys Leu Thr Phe Asn Ala Leu Leu Glu	
310 315 320	
agc ctt agc gtg aat ttc ttt caa tct tac aaa ata agc cat gag	1061
Ser Leu Ser Val Asn Phe Phe Gln Ser Tyr Lys Ile Ser His Glu	
325 330 335	
tgatttcgaa gtccccccca aagctaaagg gtttaaacgc ctttttaaag ccc	1114

<210> 36
 <211> 337
 <212> PRT
 <213> Helicobacter pylori

<400> 36

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Tyr Leu Asn Ala Tyr Leu Asp Gln Arg Pro His Ile Lys Gly Met Gly	
35 40 45	
Ile Ala Gly Thr Pro Phe Glu Cys Glu Gly Phe Phe Lys Ile Ala Cys	
50 55 60	
Val Ser Lys Glu Leu Ser Phe Leu Asp Ser Gln Asn Ser Pro Ile Val	
65 70 75 80	
Asn Phe Lys Asn Leu Ser Ile Lys Leu Arg Ser Leu Asp Lys Ser Ser	
85 90 95	
Leu Thr Leu Ser Val His Ser Gln Ile Lys Ser Pro Ile Leu Glu Gln	
100 105 110	
Asp Met Gln Gln Lys Ile Ser Gln Ile Pro Leu Lys Asp Leu Asn Ala	
115 120 125	
Leu Leu Glu Lys Met Lys Pro Thr Arg Leu Asn Cys Ser Leu Thr Phe	
130 135 140	
Asn Ala Leu Asp Glu Lys Thr Leu Asn Asp Asn Leu Lys Cys Asp Leu	

145		150		155		160
Thr	Asn	Ala	Glu	Asn	Ile	Leu
		165		170		175
Met	Glu	Ala	Gln	Glu	Asn	Leu
		180		185		190
Ser	Ser	Lys	Asp	Ala	Lys	Ala
		195		200		205
Phe	Ser	Ala	Pro	Lys	Leu	Gly
		210		215		220
Asn	Leu	Leu	Glu	Ala	Phe	Tyr
		225		230		235
Phe	Ser	Pro	Tyr	Phe	Ser	Leu
		245		250		255
Glu	Ser	Ala	Leu	Ala	Ser	Leu
		260		265		270
Ser	His	Phe	Lys	Asp	Asp	Thr
		275		280		285
Leu	Gln	Ala	Phe	Val	Ser	Met
		290		295		300
Leu	Asn	Ala	Gln	Ala	Lys	Asp
		305		310		315
Leu	Glu	Ser	Leu	Ser	Val	Asn
		325		330		335
Glu						

<210> 37
 <211> 445
 <212> DNA
 <213> *Helicobacter pylori*

<220>
 <221> CDS
 <222> (51)...(392)

<400> 37	
aaaatgaggg tggtttcaatt caagccatga gtaagttata tgagtaagcc atg aat	56
	Met Asn
	1
atc aaa acc cat tct tca aat gaa aaa gaa cgc ttt gtg cgc ata gaa	104
Ile Lys Thr His Ser Ser Asn Glu Lys Glu Arg Phe Val Arg Ile Glu	
	5 10 15
gag gac gaa aag aaa gga tta ttt gct gga act gca aat gaa aat tcg	152
Glu Asp Glu Lys Lys Gly Leu Phe Ala Gly Thr Ala Asn Glu Asn Ser	
	20 25 30
cac ggc ctt tct tta atg gct tta ata ggg gta ttg gtt ttt ggg ggc	200
His Gly Leu Ser Leu Met Ala Leu Ile Gly Val Leu Val Phe Gly Gly	
	35 40 45 50
gcg ttt tta gct ctg tta gcg cct aaa atc tat tta agc aat aat atc	248
Ala Phe Leu Ala Leu Leu Ala Pro Lys Ile Tyr Leu Ser Asn Asn Ile	

55	60	65	
tat tat att agc cgt aaa atc aac acc cta gaa gat caa aaa cgc ctg			296
Tyr Tyr Ile Ser Arg Lys Ile Asn Thr Leu Glu Asp Gln Lys Arg Leu			
70	75	80	
ctt tta gaa gag caa caa atc cta aaa aac gaa tta gaa aaa gag cgt			344
Leu Leu Glu Glu Gln Gln Ile Leu Lys Asn Glu Leu Glu Lys Glu Arg			
85	90	95	
ttt aaa tac tac ata gaa aat agt gaa aat att ggc gat att gcg ttt			392
Phe Lys Tyr Tyr Ile Glu Asn Ser Glu Asn Ile Gly Asp Ile Ala Phe			
100	105	110	
taagtgaaaa accccctatc cccttaagag agcttaatta atgggtcaatc att			445

<210> 38
 <211> 114
 <212> PRT
 <213> Helicobacter pylori

<400> 38

Met Asn Ile Lys Thr His Ser Ser Asn Glu Lys Glu Arg Phe Val Arg			
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Ile Glu Glu Asp Glu Lys Lys Gly Leu Phe Ala Gly Thr Ala Asn Glu			
20 25 30			
Asn Ser His Gly Leu Ser Leu Met Ala Leu Ile Gly Val Leu Val Phe			
35 40 45			
Gly Gly Ala Phe Leu Ala Leu Leu Ala Pro Lys Ile Tyr Leu Ser Asn			
50 55 60			
Asn Ile Tyr Tyr Ile Ser Arg Lys Ile Asn Thr Leu Glu Asp Gln Lys			
65 70 75 80			
Arg Leu Leu Leu Glu Glu Gln Gln Ile Leu Lys Asn Glu Leu Glu Lys			
85 90 95			
Glu Arg Phe Lys Tyr Tyr Ile Glu Asn Ser Glu Asn Ile Gly Asp Ile			
100 105 110			
Ala Phe			

<210> 39
 <211> 218
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (52)...(165)

<400> 39

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	His Asn
	1
atc gca cat aaa gca caa agc gca aat caa aaa cac ata att cct agc	105

Ile Ala His Lys Ala Gln Ser Ala Asn Gln Lys His Ile Ile Pro Ser
5 10 15

cat ccc cct ttc cac aat aaa caa gga ttg cgc ccc cac cgc cgc aca 153
His Pro Pro Phe His Asn Lys Gln Gly Leu Arg Pro His Arg Arg Thr
20 25 30

caa aga aat cgc taaacacaaa ccttctataa aaaccacaaa catcttgctt 205
Gln Arg Asn Arg
35

aatcctttca ctc 218

<210> 40
<211> 38
<212> PRT
<213> Helicobacter pylori

<400> 40
His Asn Ile Ala His Lys Ala Gln Ser Ala Asn Gln Lys His Ile Ile
1 5 10 15
Pro Ser His Pro Pro Phe His Asn Lys Gln Gly Leu Arg Pro His Arg
20 25 30
Arg Thr Gln Arg Asn Arg
35

<210> 41
<211> 967
<212> DNA
<213> Helicobacter pylori

<220>
<221> CDS
<222> (51)...(914)
<221> misc_feature
<222> 43
<223> n = A,T,C or G

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Met Ser
1

ggc att tta gag cct tta gga gca aat tac ttg acc ctt tta atg gtt 104
Gly Ile Leu Glu Pro Leu Gly Ala Asn Tyr Leu Thr Leu Leu Met Val
5 10 15

tgg atc cct acg act ttt tta gca tgc atg ctc acg gca ttt att atg 152
Trp Ile Pro Thr Thr Phe Leu Ala Cys Met Leu Thr Ala Phe Ile Met
20 25 30

ggg ttt act gat ttg aaa tta gac agc gat ccg cat tat tta gag cgc 200
Gly Phe Thr Asp Leu Lys Leu Asp Ser Asp Pro His Tyr Leu Glu Arg

35	40	45	50	
ttg aaa gcg ggc aaa atc tcg ccc cct aaa atc aaa gaa gaa aaa gaa				248
Leu Lys Ala Gly Lys Ile Ser Pro Pro Lys Ile Lys Glu Glu Lys Glu	55	60	65	
acc tca aaa aac gcg aaa tta tcg tta tgg att ttt atc ggt ggg gtt				296
Thr Ser Lys Asn Ala Lys Leu Ser Leu Trp Ile Phe Ile Gly Gly Val	70	75	80	
gta gcg atc gtt ttt tat gcg agc gcg att tct aaa aat atc gct ttt				344
Val Ala Ile Val Phe Tyr Ala Ser Ala Ile Ser Lys Asn Ile Ala Phe	85	90	95	
gtt agc ccg gtg gtt tta ggc aga gat cac gcg att gtg tct ttc atg				392
Val Ser Pro Val Val Leu Gly Arg Asp His Ala Ile Val Ser Phe Met	100	105	110	
cta agc gtg gcg act tta att gtg ctt ttt tgc aaa att aac gct aat				440
Leu Ser Val Ala Thr Leu Ile Val Leu Phe Cys Lys Ile Asn Ala Asn	115	120	125	130
gaa atc gct cat tca agc gtg ttt aaa tcc ggc atg caa gcg tgc gtg				488
Glu Ile Ala His Ser Ser Val Phe Lys Ser Gly Met Gln Ala Cys Val	135	140	145	
tgc gtg ttg ggc gtg gcg tgg ttg ggc gat act ttt gtg agc aat cat				536
Cys Val Leu Gly Val Ala Trp Leu Gly Asp Thr Phe Val Ser Asn His	150	155	160	
ata gat gag atc aaa cga tac gct tct ttt ttg atc gca gat tat ccg				584
Ile Asp Glu Ile Lys Arg Tyr Ala Ser Phe Leu Ile Ala Asp Tyr Pro	165	170	175	
ttt tta tta gcc gta gcg ctc ttt ttg gct tcc atg ctt ttg tat tcg				632
Phe Leu Leu Ala Val Ala Leu Phe Leu Ala Ser Met Leu Leu Tyr Ser	180	185	190	
caa gcc gcc acc tct aaa gcg ctc atc cca agc gtg atc aca gcc tta				680
Gln Ala Ala Thr Ser Lys Ala Leu Ile Pro Ser Val Ile Thr Ala Leu	195	200	205	210
ggc att agc gct aat cat acg gag cat ttg tat att atc gtg gct tcg				728
Gly Ile Ser Ala Asn His Thr Glu His Leu Tyr Ile Ile Val Ala Ser	215	220	225	
ttt gcg agc gtt tcg gcg ttg ttt gtg tta ccc act tac ccc act tta				776
Phe Ala Ser Val Ser Ala Leu Phe Val Leu Pro Thr Tyr Pro Thr Leu	230	235	240	
cta gga gcg atc gct atg gat aac acc ggc acc act aaa atg ggc cgt				824
Leu Gly Ala Ile Ala Met Asp Asn Thr Gly Thr Thr Lys Met Gly Arg	245	250	255	
tat gtg ttt gat cat gcg ttt ttg atc cct ggg gtt tta gtc gtg tct				872

Tyr Val Phe Asp His Ala Phe Leu Ile Pro Gly Val Leu Val Val Ser
 260 265 270

ttg agc gta gcg tta ggg ttt gtt gtc gcg ccg tta gtt ttg 914
 Leu Ser Val Ala Leu Gly Phe Val Val Ala Pro Leu Val Leu
 275 280 285

tagattttat caccaacgat aaaaagcttg gcggttgcgat ttttctaaac ccc 967

<210> 42
 <211> 288
 <212> PRT
 <213> Helicobacter pylori

<400> 42
 Met Ser Gly Ile Leu Glu Pro Leu Gly Ala Asn Tyr Leu Thr Leu Leu
 1 5 10 15
 Met Val Trp Ile Pro Thr Thr Phe Leu Ala Cys Met Leu Thr Ala Phe
 20 25 30
 Ile Met Gly Phe Thr Asp Leu Lys Leu Asp Ser Asp Pro His Tyr Leu
 35 40 45
 Glu Arg Leu Lys Ala Gly Lys Ile Ser Pro Pro Lys Ile Lys Glu Glu
 50 55 60
 Lys Glu Thr Ser Lys Asn Ala Lys Leu Ser Leu Trp Ile Phe Ile Gly
 65 70 75 80
 Gly Val Val Ala Ile Val Phe Tyr Ala Ser Ala Ile Ser Lys Asn Ile
 85 90 95
 Ala Phe Val Ser Pro Val Val Leu Gly Arg Asp His Ala Ile Val Ser
 100 105 110
 Phe Met Leu Ser Val Ala Thr Leu Ile Val Leu Phe Cys Lys Ile Asn
 115 120 125
 Ala Asn Glu Ile Ala His Ser Ser Val Phe Lys Ser Gly Met Gln Ala
 130 135 140
 Cys Val Cys Val Leu Gly Val Ala Trp Leu Gly Asp Thr Phe Val Ser
 145 150 155 160
 Asn His Ile Asp Glu Ile Lys Arg Tyr Ala Ser Phe Leu Ile Ala Asp
 165 170 175
 Tyr Pro Phe Leu Leu Ala Val Ala Leu Phe Leu Ala Ser Met Leu Leu
 180 185 190
 Tyr Ser Gln Ala Ala Thr Ser Lys Ala Leu Ile Pro Ser Val Ile Thr
 195 200 205
 Ala Leu Gly Ile Ser Ala Asn His Thr Glu His Leu Tyr Ile Ile Val
 210 215 220
 Ala Ser Phe Ala Ser Val Ser Ala Leu Phe Val Leu Pro Thr Tyr Pro
 225 230 235 240
 Thr Leu Leu Gly Ala Ile Ala Met Asp Asn Thr Gly Thr Thr Lys Met
 245 250 255
 Gly Arg Tyr Val Phe Asp His Ala Phe Leu Ile Pro Gly Val Leu Val
 260 265 270
 Val Ser Leu Ser Val Ala Leu Gly Phe Val Val Ala Pro Leu Val Leu
 275 280 285

<210> 43
 <211> 1237

<212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (51)...(1184)

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<400> 43
aaaaattcta tcatttttgc gcggtatattt cattttaaca aggagcaaaa atg cta      56
                                     Met Leu
                                     1

gaa aat agc tct ata tgg agc aat cct gcc ttt gtg gct atc att tgc      104
Glu Asn Ser Ser Ile Trp Ser Asn Pro Ala Phe Val Ala Ile Ile Cys
      5                      10                      15

atg tgc gtt ctt agc ctt tta agg ctc aat gtc atg ctt tct atg att      152
Met Cys Val Leu Ser Leu Leu Arg Leu Asn Val Met Leu Ser Met Ile
      20                      25                      30

agt gcg act ctc ata gca gga ctt atg gga ggg ctt ggg atc acg gag      200
Ser Ala Thr Leu Ile Ala Gly Leu Met Gly Gly Leu Gly Ile Thr Glu
      35                      40                      45                      50

agt ttt aat gca atg ata gac ggc atg aaa ggc aat ttg aac atc gct      248
Ser Phe Asn Ala Met Ile Asp Gly Met Lys Gly Asn Leu Asn Ile Ala
      55                      60                      65

tta agc tac atc ctt tta ggg gct tta gcg gta gcg atc gct aaa agc      296
Leu Ser Tyr Ile Leu Leu Gly Ala Leu Ala Val Ala Ile Ala Lys Ser
      70                      75                      80

aat ctc att aaa gtc gct ttg agt aaa tta ata ggt tta atg gat tac      344
Asn Leu Ile Lys Val Ala Leu Ser Lys Leu Ile Gly Leu Met Asp Tyr
      85                      90                      95

aag cga tcc act ttt tgc ttt ttg atc gct ttc atc gca tgc ttt tcg      392
Lys Arg Ser Thr Phe Cys Phe Leu Ile Ala Phe Ile Ala Cys Phe Ser
      100                     105                     110

caa aat tta gtg ccg gtg cat atc gct ttt atc cct att tta atc ccc      440
Gln Asn Leu Val Pro Val His Ile Ala Phe Ile Pro Ile Leu Ile Pro
      115                     120                     125                     130

cct ctt ttg cat tta atg aac cgg cta gaa ttg gat aga aga gcg gtc      488
Pro Leu Leu His Leu Met Asn Arg Leu Glu Leu Asp Arg Arg Ala Val
      135                     140                     145

gct tgc gct tta acc ttt ggc ttg caa gcc ccc tac ttg gtg ctt cct      536
Ala Cys Ala Leu Thr Phe Gly Leu Gln Ala Pro Tyr Leu Val Leu Pro
      150                     155                     160

gta ggg ttt ggc ttg att ttt caa acc acc att tta gag caa tta aaa      584
Val Gly Phe Gly Leu Ile Phe Gln Thr Thr Ile Leu Glu Gln Leu Lys
      165                     170                     175

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gct aat ggc gtt agc acc acc ata gcg caa atc aca gga gtg atg tgg	632
Ala Asn Gly Val Ser Thr Thr Ile Ala Gln Ile Thr Gly Val Met Trp	
180 185 190	
ata gcg ggg tta gcg atg gtc gtt gga ctg ctt gtt gct gta tta acg	680
Ile Ala Gly Leu Ala Met Val Val Gly Leu Leu Val Ala Val Leu Thr	
195 200 205 210	
cta tac aaa aaa ccc agg cac tac aaa gag aaa tct ttt aat ata gaa	728
Leu Tyr Lys Lys Pro Arg His Tyr Lys Glu Lys Ser Phe Asn Ile Glu	
215 220 225	
aat tac gcc tcg ctt caa tta aac tac cat gac tac ttg act ttt ata	776
Asn Tyr Ala Ser Leu Gln Leu Asn Tyr His Asp Tyr Leu Thr Phe Ile	
230 235 240	
ggg att gtc gta gcg ttt gtg atc caa tta gcc acc gat tcg atg ccc	824
Gly Ile Val Val Ala Phe Val Ile Gln Leu Ala Thr Asp Ser Met Pro	
245 250 255	
tta gcc gcc ttt tta gcg tta gcg atc atc tta tta gcc cgt gcc att	872
Leu Ala Ala Phe Leu Ala Leu Ala Ile Ile Leu Leu Gly Arg Gly Ile	
260 265 270	
aag ttt aaa gaa aca gac tcg ctt atg gat gat agc gtg aaa atg atg	920
Lys Phe Lys Glu Thr Asp Ser Leu Met Asp Asp Ser Val Lys Met Met	
275 280 285 290	
gcg ttt atc gct ttt gtg atg ttg gtg gct agc ggg ttt gga gaa gtg	968
Ala Phe Ile Ala Phe Val Met Leu Val Ala Ser Gly Phe Gly Glu Val	
295 300 305	
ttg caa aaa gtg cat gcg ata gag ggc tta gtg aat gcg att aca agc	1016
Leu Gln Lys Val His Ala Ile Glu Gly Leu Val Asn Ala Ile Thr Ser	
310 315 320	
gta gtc caa ggg aag ctt tta ggg gct ttt tta atg ctt gtt gta ggg	1064
Val Val Gln Gly Lys Leu Leu Gly Ala Phe Leu Met Leu Val Val Gly	
325 330 335	
ctt ttt atc act atg ggg ata ggg act tct ttt ggc act att cct atc	1112
Leu Phe Ile Thr Met Gly Ile Gly Thr Ser Phe Gly Thr Ile Pro Ile	
340 345 350	
atc gct gtg ttt tat gtc cct tta tgc gcg aaa tta ggt ttt agc gta	1160
Ile Ala Val Phe Tyr Val Pro Leu Cys Ala Lys Leu Gly Phe Ser Val	
355 360 365 370	
gaa tct acg att tta ctc atc gca tagccgcagc tttaggcgat gcaggctcac	1214
Glu Ser Thr Ile Leu Leu Ile Ala	
375	
cggttagcga tagcaccatg ggg	1237

<210> 44
 <211> 378
 <212> PRT
 <213> Helicobacter pylori

<400> 44
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 1 5 10 15
 Ile Cys Met Cys Val Leu Ser Leu Leu Arg Leu Asn Val Met Leu Ser
 20 25 30
 Met Ile Ser Ala Thr Leu Ile Ala Gly Leu Met Gly Gly Leu Gly Ile
 35 40 45
 Thr Glu Ser Phe Asn Ala Met Ile Asp Gly Met Lys Gly Asn Leu Asn
 50 55 60
 Ile Ala Leu Ser Tyr Ile Leu Leu Gly Ala Leu Ala Val Ala Ile Ala
 65 70 75 80
 Lys Ser Asn Leu Ile Lys Val Ala Leu Ser Lys Leu Ile Gly Leu Met
 85 90 95
 Asp Tyr Lys Arg Ser Thr Phe Cys Phe Leu Ile Ala Phe Ile Ala Cys
 100 105 110
 Phe Ser Gln Asn Leu Val Pro Val His Ile Ala Phe Ile Pro Ile Leu
 115 120 125
 Ile Pro Pro Leu Leu His Leu Met Asn Arg Leu Glu Leu Asp Arg Arg
 130 135 140
 Ala Val Ala Cys Ala Leu Thr Phe Gly Leu Gln Ala Pro Tyr Leu Val
 145 150 155 160
 Leu Pro Val Gly Phe Gly Leu Ile Phe Gln Thr Thr Ile Leu Glu Gln
 165 170 175
 Leu Lys Ala Asn Gly Val Ser Thr Thr Ile Ala Gln Ile Thr Gly Val
 180 185 190
 Met Trp Ile Ala Gly Leu Ala Met Val Val Gly Leu Leu Val Ala Val
 195 200 205
 Leu Thr Leu Tyr Lys Lys Pro Arg His Tyr Lys Glu Lys Ser Phe Asn
 210 215 220
 Ile Glu Asn Tyr Ala Ser Leu Gln Leu Asn Tyr His Asp Tyr Leu Thr
 225 230 235 240
 Phe Ile Gly Ile Val Val Ala Phe Val Ile Gln Leu Ala Thr Asp Ser
 245 250 255
 Met Pro Leu Ala Ala Phe Leu Ala Leu Ala Ile Ile Leu Leu Gly Arg
 260 265 270
 Gly Ile Lys Phe Lys Glu Thr Asp Ser Leu Met Asp Asp Ser Val Lys
 275 280 285
 Met Met Ala Phe Ile Ala Phe Val Met Leu Val Ala Ser Gly Phe Gly
 290 295 300
 Glu Val Leu Gln Lys Val His Ala Ile Glu Gly Leu Val Asn Ala Ile
 305 310 315 320
 Thr Ser Val Val Gln Gly Lys Leu Leu Gly Ala Phe Leu Met Leu Val
 325 330 335
 Val Gly Leu Phe Ile Thr Met Gly Ile Gly Thr Ser Phe Gly Thr Ile
 340 345 350
 Pro Ile Ile Ala Val Phe Tyr Val Pro Leu Cys Ala Lys Leu Gly Phe
 355 360 365
 Ser Val Glu Ser Thr Ile Leu Leu Ile Ala
 370 375

<210> 45
 <211> 945
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (61)...(636)

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 gtg ggg tta gta acc acg aca ttg gct tta ggg att tct tgc atc att 108
 Val Gly Leu Val Thr Thr Leu Ala Leu Gly Ile Ser Cys Ile Ile
 1 5 10 15
 tta ttc gtg gcg ttt ttt agc atc att tgg cgg att ttg gct ttg att 156
 Leu Phe Val Ala Phe Phe Ser Ile Ile Trp Arg Ile Leu Ala Leu Ile
 20 25 30
 tct ggg ttc cct tct tgc tgt ttg tat tgc tcc tta act tct tgt tta 204
 Ser Gly Phe Pro Ser Cys Cys Leu Tyr Ser Ser Leu Thr Ser Cys Leu
 35 40 45
 gtc att ttt aaa gag ttg gtg tat tgg cgg cgt ttg atc gct aaa tct 252
 Val Ile Phe Lys Glu Leu Val Tyr Trp Arg Arg Leu Ile Ala Lys Ser
 50 55 60
 ata aaa gcc aag aca aaa aat aaa aat aaa agc gaa gaa atg agc cat 300
 Ile Lys Ala Lys Thr Lys Asn Lys Asn Lys Ser Glu Glu Met Ser His
 65 70 75 80
 aac gcc tta ttt tta aac cac aac aac tgg cct tgt aaa ttc aaa aga 348
 Asn Ala Leu Phe Leu Asn His Asn Asn Trp Pro Cys Lys Phe Lys Arg
 85 90 95
 gcc gca tgg ttt aat tcc cct aaa aac aaa gaa aag atg aaa aac ccc 396
 Ala Ala Trp Phe Asn Ser Pro Lys Asn Lys Glu Lys Met Lys Asn Pro
 100 105 110
 aga aaa aaa gct aaa aaa act ttt aag gtg atc aaa ctc cca tca agg 444
 Arg Lys Lys Ala Lys Lys Thr Phe Lys Val Ile Lys Leu Pro Ser Arg
 115 120 125
 agc ttt ttt aaa gaa aaa agg ttt ttg acg cca ttg ata ggg ttg att 492
 Ser Phe Phe Lys Glu Lys Arg Phe Leu Thr Pro Leu Ile Gly Leu Ile
 130 135 140
 tta gaa aat tta ggc tca atg act tta ggg gca aag agc cag cca aat 540
 Leu Glu Asn Leu Gly Ser Met Thr Leu Gly Ala Lys Ser Gln Pro Asn
 145 150 155 160
 tgc aag aca tta gat aaa aac gcc acc acc act aaa atg att aaa atc 588
 Cys Lys Thr Leu Asp Lys Asn Ala Thr Thr Thr Lys Met Ile Lys Ile
 165 170 175

ggt aaa agc aat aaa aaa gtg tct tta gcc agt tgg tta aac agc tct 636
 Gly Lys Ser Asn Lys Lys Val Ser Leu Ala Ser Trp Leu Asn Ser Ser
 180 185 190

tgaacgcttt ctttactgaa atctagggaa aaatctttca acacatggcg atacatttcg 696
 ctaaagccat ccaccacca tataaaaaaa acaaaaatac taattagccc ggccaataac 756
 cccaaaaccc ccaccacttc catgctctta ggcacattgc cttcttctct ggcttttttg 816
 atttttttcg cgctagggag ttcggttttt tcttcttcag ccattggccc tcttttttaa 876
 aatttgaacg gctaattcat agtcttttag ggtgttttagg tttaaaaatt cttcttcttt 936
 gtcaaaatt 945

<210> 46
 <211> 192
 <212> PRT
 <213> *Helicobacter pylori*

<400> 46
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 Leu Phe Val Ala Phe Phe Ser Ile Ile Trp Arg Ile Leu Ala Leu Ile
 20 25 30
 Ser Gly Phe Pro Ser Cys Cys Leu Tyr Ser Ser Leu Thr Ser Cys Leu
 35 40 45
 Val Ile Phe Lys Glu Leu Val Tyr Trp Arg Arg Leu Ile Ala Lys Ser
 50 55 60
 Ile Lys Ala Lys Thr Lys Asn Lys Asn Lys Ser Glu Glu Met Ser His
 65 70 75 80
 Asn Ala Leu Phe Leu Asn His Asn Asn Trp Pro Cys Lys Phe Lys Arg
 85 90 95
 Ala Ala Trp Phe Asn Ser Pro Lys Asn Lys Glu Lys Met Lys Asn Pro
 100 105 110
 Arg Lys Lys Ala Lys Lys Thr Phe Lys Val Ile Lys Leu Pro Ser Arg
 115 120 125
 Ser Phe Phe Lys Glu Lys Arg Phe Leu Thr Pro Leu Ile Gly Leu Ile
 130 135 140
 Leu Glu Asn Leu Gly Ser Met Thr Leu Gly Ala Lys Ser Gln Pro Asn
 145 150 155 160
 Cys Lys Thr Leu Asp Lys Asn Ala Thr Thr Thr Lys Met Ile Lys Ile
 165 170 175
 Gly Lys Ser Asn Lys Lys Val Ser Leu Ala Ser Trp Leu Asn Ser Ser
 180 185 190

<210> 47
 <211> 851
 <212> DNA
 <213> *Helicobacter pylori*

<220>
 <221> CDS
 <222> (49)...(783)

<400> 47
 attgatagtt tcttcagcaa gaatgattag gcaatgatta ggttgtag atg aat ttt 57
 Met Asn Phe

tat	caa	aaa	ata	tac	act	cat	aaa	gtc	ggt	ttt	tct	tca	ttg	ttt	ttt	105
Tyr	Gln	Lys	Ile	Tyr	Thr	His	Lys	Val	Val	Phe	Ser	Ser	Leu	Phe	Phe	
	5						10				15					
ttg	ttg	ttt	ttg	ttc	aat	gtg	gaa	act	ttg	ttg	ctt	tcg	cat	ttc	agc	153
Leu	Leu	Phe	Leu	Phe	Asn	Val	Glu	Thr	Leu	Leu	Leu	Ser	His	Phe	Ser	
	20				25				30						35	
gat	gat	ttt	tcg	caa	ttg	ttt	ttt	ttg	ttt	gaa	aac	cat	ggt	tat	gat	201
Asp	Asp	Phe	Ser	Gln	Leu	Phe	Phe	Leu	Phe	Glu	Asn	His	Val	Tyr	Asp	
				40				45						50		
ttc	att	gtc	aaa	tta	gat	tat	ttg	ggg	cta	ata	ggc	ggt	tct	tta	att	249
Phe	Ile	Val	Lys	Leu	Asp	Tyr	Leu	Gly	Leu	Ile	Gly	Val	Ser	Leu	Ile	
			55					60					65			
tat	ctg	ctt	gtg	ctt	att	cta	aag	cct	ttc	acc	ctc	acg	cgc	caa	aaa	297
Tyr	Leu	Leu	Val	Leu	Ile	Leu	Lys	Pro	Phe	Thr	Leu	Thr	Arg	Gln	Lys	
			70				75						80			
tgc	gct	tgc	gta	ggg	ata	tta	tgc	ctt	tct	ttc	tac	gct	tgg	aat	ttt	345
Cys	Ala	Cys	Val	Gly	Ile	Leu	Cys	Leu	Ser	Phe	Tyr	Ala	Trp	Asn	Phe	
	85					90					95					
cct	ggt	aaa	gat	tct	tta	atg	gtg	ctt	tat	ctt	ttc	tat	ttt	gcg	ctg	393
Pro	Val	Lys	Asp	Ser	Leu	Met	Val	Leu	Tyr	Leu	Phe	Tyr	Phe	Ala	Leu	
100					105					110					115	
tta	gcg	act	tta	ttg	tgg	cgt	ttt	tta	ggg	gct	agc	atg	aag	caa	tct	441
Leu	Ala	Thr	Leu	Leu	Trp	Arg	Phe	Leu	Gly	Ala	Ser	Met	Lys	Gln	Ser	
				120					125					130		
ttc	ttg	ccc	tct	atg	aat	att	tgc	atc	gtg	tgg	ggt	ttt	gct	tct	tct	489
Phe	Leu	Pro	Ser	Met	Asn	Ile	Cys	Ile	Val	Trp	Val	Phe	Ala	Ser	Ser	
			135				140						145			
tta	cag	agt	ttt	agg	ttt	tta	agc	gtg	tct	gat	tgc	gtg	gat	ttt	tcc	537
Leu	Gln	Ser	Phe	Arg	Phe	Leu	Ser	Val	Ser	Asp	Cys	Val	Asp	Phe	Ser	
			150				155						160			
ctt	ttt	aca	ctc	gcg	ctt	att	tta	ttg	ata	ctg	ggt	tta	atc	tat	tgc	585
Leu	Phe	Thr	Leu	Ala	Leu	Ile	Leu	Leu	Ile	Leu	Val	Leu	Ile	Tyr	Cys	
			165			170					175					
aaa	cgc	ctt	ttt	ggg	ttg	tat	gaa	tac	gct	aac	acg	ctc	att	ttg	atc	633
Lys	Arg	Leu	Phe	Gly	Leu	Tyr	Glu	Tyr	Ala	Asn	Thr	Leu	Ile	Leu	Ile	
180					185					190					195	
gtg	ggg	ctt	agc	gtg	gtg	gtg	cta	tgc	tct	agc	atg	ttc	att	caa	act	681
Val	Gly	Leu	Ser	Val	Val	Val	Leu	Cys	Ser	Ser	Met	Phe	Ile	Gln	Thr	
				200					205					210		
aaa	gaa	tac	tat	ggc	atg	cga	ttg	ggt	ttt	tat	ttt	tta	ggc	ctg	tta	729

Lys Glu Tyr Tyr Gly Met Arg Leu Gly Phe Tyr Phe Leu Gly Leu Leu
 215 220 225

ggg tgg ctt tta gaa tat gtg cat aac act tta agg cgt ttg gaa cat 777
 Gly Trp Leu Leu Glu Tyr Val His Asn Thr Leu Arg Arg Leu Glu His
 230 235 240

caa att taaagctcaa ataggaatag ctaaagcctt ttgattgagt gtttttttag 833
 Gln Ile
 245

ggcttaaaag cgggttta 851

<210> 48
 <211> 245
 <212> PRT
 <213> Helicobacter pylori

<400> 48
 Met Asn Phe Tyr Gln Lys Ile Tyr Thr His Lys Val Val Phe Ser Ser
 1 5 10 15
 Leu Phe Phe Leu Leu Phe Leu Phe Asn Val Glu Thr Leu Leu Leu Ser
 20 25 30
 His Phe Ser Asp Asp Phe Ser Gln Leu Phe Phe Leu Phe Glu Asn His
 35 40 45
 Val Tyr Asp Phe Ile Val Lys Leu Asp Tyr Leu Gly Leu Ile Gly Val
 50 55 60
 Ser Leu Ile Tyr Leu Leu Val Leu Ile Leu Lys Pro Phe Thr Leu Thr
 65 70 75 80
 Arg Gln Lys Cys Ala Cys Val Gly Ile Leu Cys Leu Ser Phe Tyr Ala
 85 90 95
 Trp Asn Phe Pro Val Lys Asp Ser Leu Met Val Leu Tyr Leu Phe Tyr
 100 105 110
 Phe Ala Leu Leu Ala Thr Leu Leu Trp Arg Phe Leu Gly Ala Ser Met
 115 120 125
 Lys Gln Ser Phe Leu Pro Ser Met Asn Ile Cys Ile Val Trp Val Phe
 130 135 140
 Ala Ser Ser Leu Gln Ser Phe Arg Phe Leu Ser Val Ser Asp Cys Val
 145 150 155 160
 Asp Phe Ser Leu Phe Thr Leu Ala Leu Ile Leu Leu Ile Leu Val Leu
 165 170 175
 Ile Tyr Cys Lys Arg Leu Phe Gly Leu Tyr Glu Tyr Ala Asn Thr Leu
 180 185 190
 Ile Leu Ile Val Gly Leu Ser Val Val Leu Cys Ser Ser Met Phe
 195 200 205
 Ile Gln Thr Lys Glu Tyr Tyr Gly Met Arg Leu Gly Phe Tyr Phe Leu
 210 215 220
 Gly Leu Leu Gly Trp Leu Leu Glu Tyr Val His Asn Thr Leu Arg Arg
 225 230 235 240
 Leu Glu His Gln Ile
 245

<210> 49
 <211> 827

<212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (95)...(745)

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cttttttactt ttagttaagt tgtaagaaac ttttagctacc atgcgataca aaaaaggatt 60
ttaagtgcgt tttggtaaaa ttgattatatt gaac atg ctc cct ttt gat gtg ttt 115
                                Met Leu Pro Phe Asp Val Phe
                                1                      5

atc aaa tcc tac ccc acc cct tgt tat ttc aaa caa ttc tta cgg ctt 163
Ile Lys Ser Tyr Pro Thr Pro Cys Tyr Phe Lys Gln Phe Leu Arg Leu
      10                      15                      20

aaa aaa acc tac ccc tcc aaa ctc aat gag agt ttt tta ttc agg cgt 211
Lys Lys Thr Tyr Pro Ser Lys Leu Asn Glu Ser Phe Leu Phe Arg Arg
      25                      30                      35

att gat gcg ggg ttt att tct tct atc gcc ggc tat cca ttc gct ctt 259
Ile Asp Ala Gly Phe Ile Ser Ser Ile Ala Gly Tyr Pro Phe Ala Leu
      40                      45                      50                      55

cat tcc cat tct cta ggc att gtc gct tat aag gaa gtt tta agc gtg 307
His Ser His Ser Leu Gly Ile Val Ala Tyr Lys Glu Val Leu Ser Val
      60                      65                      70

ctg gtt gtg gat aca aaa aac gct ttt gat aaa gaa agc gct tct tca 355
Leu Val Val Asp Thr Lys Asn Ala Phe Asp Lys Glu Ser Ala Ser Ser
      75                      80                      85

aac gcc ctc tct caa gcg cta ggg tta aag ggc gaa gtg tta atc ggc 403
Asn Ala Leu Ser Gln Ala Leu Gly Leu Lys Gly Glu Val Leu Ile Gly
      90                      95                      100

aat aaa gca ctg cag ttt tat tat tcc aac cct aaa aaa gat ttt ata 451
Asn Lys Ala Leu Gln Phe Tyr Tyr Ser Asn Pro Lys Lys Asp Phe Ile
      105                      110                      115

gat tta gcc gct ctt tgg tat gaa aaa aaa cgc ttg ccg ttt gtt ttt 499
Asp Leu Ala Ala Leu Trp Tyr Glu Lys Lys Arg Leu Pro Phe Val Phe
      120                      125                      130                      135

ggg cgt ttg tgt tat tac caa aac aag gat ttt tac aag cgc ttg tct 547
Gly Arg Leu Cys Tyr Tyr Gln Asn Lys Asp Phe Tyr Lys Arg Leu Ser
      140                      145                      150

tta gct ttc aaa cat caa aaa aca aaa atc cct tac tac atc ctt aaa 595
Leu Ala Phe Lys His Gln Lys Thr Lys Ile Pro Tyr Tyr Ile Leu Lys
      155                      160                      165

gaa gcc gct tta aaa acc aac tta aaa cgc caa gat att tta aat tac 643
Glu Ala Ala Leu Lys Thr Asn Leu Lys Arg Gln Asp Ile Leu Asn Tyr

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170	175	180	
ttg caa aaa att tac tac act tta ggc aaa aag gag caa tta ggt ctt			691
Leu Gln Lys Ile Tyr Tyr Thr Leu Gly Lys Lys Glu Gln Leu Gly Leu			
185	190	195	
aaa gcg ttc tat cgt gaa ttg tta ttc aaa cgc att caa aaa ccc aag			739
Lys Ala Phe Tyr Arg Glu Leu Leu Phe Lys Arg Ile Gln Lys Pro Lys			
200	205	210	215
cgt ttt tagtgattcg ctgagaatgt aggccttaaaa ttcagaaagg gtgttttttaa			795
Arg Phe			
gcaagattag gttacaatca caagttttat ta			827
<210> 50			
<211> 217			
<212> PRT			
<213> Helicobacter pylori			
<400> 50			
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1 5 10 15			
Phe Lys Gln Phe Leu Arg Leu Lys Lys Thr Tyr Pro Ser Lys Leu Asn			
20 25 30			
Glu Ser Phe Leu Phe Arg Arg Ile Asp Ala Gly Phe Ile Ser Ser Ile			
35 40 45			
Ala Gly Tyr Pro Phe Ala Leu His Ser His Ser Leu Gly Ile Val Ala			
50 55 60			
Tyr Lys Glu Val Leu Ser Val Leu Val Val Asp Thr Lys Asn Ala Phe			
65 70 75 80			
Asp Lys Glu Ser Ala Ser Ser Asn Ala Leu Ser Gln Ala Leu Gly Leu			
85 90 95			
Lys Gly Glu Val Leu Ile Gly Asn Lys Ala Leu Gln Phe Tyr Tyr Ser			
100 105 110			
Asn Pro Lys Lys Asp Phe Ile Asp Leu Ala Ala Leu Trp Tyr Glu Lys			
115 120 125			
Lys Arg Leu Pro Phe Val Phe Gly Arg Leu Cys Tyr Tyr Gln Asn Lys			
130 135 140			
Asp Phe Tyr Lys Arg Leu Ser Leu Ala Phe Lys His Gln Lys Thr Lys			
145 150 155 160			
Ile Pro Tyr Tyr Ile Leu Lys Glu Ala Ala Leu Lys Thr Asn Leu Lys			
165 170 175			
Arg Gln Asp Ile Leu Asn Tyr Leu Gln Lys Ile Tyr Tyr Thr Leu Gly			
180 185 190			
Lys Lys Glu Gln Leu Gly Leu Lys Ala Phe Tyr Arg Glu Leu Leu Phe			
195 200 205			
Lys Arg Ile Gln Lys Pro Lys Arg Phe			
210 215			
<210> 51			
<211> 736			
<212> DNA			

<213> Helicobacter pylori

<220>

<221> CDS

<222> (76)...(663)

<400> 51

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gcaacaagaa atttttagaga aaatgagacc caacgctcaa aaaattcaag cgggttaaac 60
ggctaaaaaag gagag atg atg gga tac att cct tat gta ata gag aat acc 111
      Met Met Gly Tyr Ile Pro Tyr Val Ile Glu Asn Thr
            1             5             10
```

```
gat cgt ggg gag cgt agc tat gat att tac tcg cgc ctt tta aag gat 159
Asp Arg Gly Glu Arg Ser Tyr Asp Ile Tyr Ser Arg Leu Leu Lys Asp
            15             20             25
```

```
cgc att gtt tta ttg agc ggt gaa att aat gac agc gtg gcg tct tct 207
Arg Ile Val Leu Leu Ser Gly Glu Ile Asn Asp Ser Val Ala Ser Ser
            30             35             40
```

```
atc gtg gcc caa ctc ttg ttt ttg gaa gct gaa gac cct gaa aaa gac 255
Ile Val Ala Gln Leu Leu Phe Leu Glu Ala Glu Asp Pro Glu Lys Asp
            45             50             55             60
```

```
att ggt ttg tat atc aat tct ccc ggt ggg gtg ata aca agc ggt ctt 303
Ile Gly Leu Tyr Ile Asn Ser Pro Gly Gly Val Ile Thr Ser Gly Leu
            65             70             75
```

```
agt att tat gac acc atg aat ttt atc cgc cct gat gtt tcc acg att 351
Ser Ile Tyr Asp Thr Met Asn Phe Ile Arg Pro Asp Val Ser Thr Ile
            80             85             90
```

```
tgc atc ggt caa gcg gct tct atg ggg gcg ttt tta ctg agc tgt ggg 399
Cys Ile Gly Gln Ala Ala Ser Met Gly Ala Phe Leu Leu Ser Cys Gly
            95             100             105
```

```
gct aag ggc aag cgc ttt tcg cta ccc cat tca agg att atg atc cac 447
Ala Lys Gly Lys Arg Phe Ser Leu Pro His Ser Arg Ile Met Ile His
            110             115             120
```

```
cag cct tta ggg ggg gct caa ggg caa gcg agc gat att gaa atc att 495
Gln Pro Leu Gly Gly Ala Gln Gly Gln Ala Ser Asp Ile Glu Ile Ile
            125             130             135             140
```

```
tct aat gag att ctc agg ctt aaa ggc ttg atg aat tct att cta gct 543
Ser Asn Glu Ile Leu Arg Leu Lys Gly Leu Met Asn Ser Ile Leu Ala
            145             150             155
```

```
caa aac tca ggg cag agt ttg gag caa atc gct aaa gac acg gac agg 591
Gln Asn Ser Gly Gln Ser Leu Glu Gln Ile Ala Lys Asp Thr Asp Arg
            160             165             170
```

```
gat ttt tat atg agt gct aaa gaa gct aaa gag tat ggc ttg att gat 639
Asp Phe Tyr Met Ser Ala Lys Glu Ala Lys Glu Tyr Gly Leu Ile Asp
            175             180             185
```

aaa gtg tta cag aaa aac gtg aag tgattgcatg gcggtattag agattatcca 693
 Lys Val Leu Gln Lys Asn Val Lys
 190 195

ttacccttct aaaatcttaa gaacgatttc taaagaggtc gtt 736

<210> 52
 <211> 196
 <212> PRT
 <213> Helicobacter pylori

<400> 52
 Met Met Gly Tyr Ile Pro Tyr Val Ile Glu Asn Thr Asp Arg Gly Glu
 1 5 10 15
 Arg Ser Tyr Asp Ile Tyr Ser Arg Leu Leu Lys Asp Arg Ile Val Leu
 20 25 30
 Leu Ser Gly Glu Ile Asn Asp Ser Val Ala Ser Ser Ile Val Ala Gln
 35 40 45
 Leu Leu Phe Leu Glu Ala Glu Asp Pro Glu Lys Asp Ile Gly Leu Tyr
 50 55 60
 Ile Asn Ser Pro Gly Gly Val Ile Thr Ser Gly Leu Ser Ile Tyr Asp
 65 70 75 80
 Thr Met Asn Phe Ile Arg Pro Asp Val Ser Thr Ile Cys Ile Gly Gln
 85 90 95
 Ala Ala Ser Met Gly Ala Phe Leu Leu Ser Cys Gly Ala Lys Gly Lys
 100 105 110
 Arg Phe Ser Leu Pro His Ser Arg Ile Met Ile His Gln Pro Leu Gly
 115 120 125
 Gly Ala Gln Gly Gln Ala Ser Asp Ile Glu Ile Ile Ser Asn Glu Ile
 130 135 140
 Leu Arg Leu Lys Gly Leu Met Asn Ser Ile Leu Ala Gln Asn Ser Gly
 145 150 155 160
 Gln Ser Leu Glu Gln Ile Ala Lys Asp Thr Asp Arg Asp Phe Tyr Met
 165 170 175
 Ser Ala Lys Glu Ala Lys Glu Tyr Gly Leu Ile Asp Lys Val Leu Gln
 180 185 190
 Lys Asn Val Lys
 195

<210> 53
 <211> 904
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (1)...(852)

<400> 53
 cgc ata aaa aaa gaa cgc ttg aac aaa ctg ctt aaa agg ggg ttt tta 48
 Arg Ile Lys Lys Glu Arg Leu Asn Lys Leu Leu Lys Arg Gly Phe Leu
 1 5 10 15

gcg ttc ttt ttg agc gtg tat tta agg gct gat gat ttg gtt act tac	96
Ala Phe Phe Leu Ser Val Tyr Leu Arg Ala Asp Asp Leu Val Thr Tyr	
20 25 30	
acc atc atc aaa gaa aaa gat cta gga tac cag cgg ttt tta gcc aag	144
Thr Ile Ile Lys Glu Lys Asp Leu Gly Tyr Gln Arg Phe Leu Ala Lys	
35 40 45	
aag tgt tta agg ggt aaa acc cac cct ccg tgt ttt act aag cct aaa	192
Lys Cys Leu Arg Gly Lys Thr His Pro Pro Cys Phe Thr Lys Pro Lys	
50 55 60	
aag cct aaa aga aaa ctt ttt aat ata gac aaa agc tcc cac tat tat	240
Lys Pro Lys Arg Lys Leu Phe Asn Ile Asp Lys Ser Ser His Tyr Tyr	
65 70 75 80	
ggc aca agc gtg gtg caa atg tca tgg cta cag agt agg gaa aaa ttt	288
Gly Thr Ser Val Val Gln Met Ser Trp Leu Gln Ser Arg Glu Lys Phe	
85 90 95	
gaa aac cat tca aaa tac cga gac att cct ttt gct gaa gtc agt ttg	336
Glu Asn His Ser Lys Tyr Arg Asp Ile Pro Phe Ala Glu Val Ser Leu	
100 105 110	
att tat ggc tat aaa caa ttt ttt cct aaa aaa gag cgc tac ggc ttc	384
Ile Tyr Gly Tyr Lys Gln Phe Phe Pro Lys Lys Glu Arg Tyr Gly Phe	
115 120 125	
cgt ttt tat gtc tct ttg gat tac gct tat ggg ttt ttt ctt aaa aat	432
Arg Phe Tyr Val Ser Leu Asp Tyr Ala Tyr Gly Phe Phe Leu Lys Asn	
130 135 140	
aag ggc gtg ttg ggc gat agt ttg agg gag agt tcg caa atc cct aaa	480
Lys Gly Val Leu Gly Asp Ser Leu Arg Glu Ser Ser Gln Ile Pro Lys	
145 150 155 160	
agc tat aga gaa aaa ttg caa aga aaa gag act ttt att aac gct att	528
Ser Tyr Arg Glu Lys Leu Gln Arg Lys Glu Thr Phe Ile Asn Ala Ile	
165 170 175	
ttt tat ggc gcg gga gct gac ttt tta tac aaa cgc gct ttt gga acg	576
Phe Tyr Gly Ala Gly Ala Asp Phe Leu Tyr Lys Arg Ala Phe Gly Thr	
180 185 190	
ctg att tta ggg atg aat ttc gtg gga gaa acc tgg ttt tat gaa aca	624
Leu Ile Leu Gly Met Asn Phe Val Gly Glu Thr Trp Phe Tyr Glu Thr	
195 200 205	
aag att ttt aaa aag tgg gct aaa gat cct ttg agc gtt tat cac cct	672
Lys Ile Phe Lys Lys Trp Ala Lys Asp Pro Leu Ser Val Tyr His Pro	
210 215 220	
tac atg ttt caa gtg atg ttg aat gtg ggg tat cgt tac cgc ttt tca	720
Tyr Met Phe Gln Val Met Leu Asn Val Gly Tyr Arg Tyr Arg Phe Ser	
225 230 235 240	

agg tat aag aat tgg gcg ata gaa ttg ggt gcg cgc atc cct ttt tta 768
 Arg Tyr Lys Asn Trp Ala Ile Glu Leu Gly Ala Arg Ile Pro Phe Leu
 245 250 255

acc aat gat tat ttt aaa acc cct tta tac acc ctt cat ttc aag cgc 816
 Thr Asn Asp Tyr Phe Lys Thr Pro Leu Tyr Thr Leu His Phe Lys Arg
 260 265 270

aat att tct gtc tat ctc act tca act tat gac ttt tagtttttta 862
 Asn Ile Ser Val Tyr Leu Thr Ser Thr Tyr Asp Phe
 275 280

aatttttgaa aactagaatt aaaaccgctt tttataaact gg 904

<210> 54
 <211> 284
 <212> PRT
 <213> Helicobacter pylori

<400> 54
 Arg Ile Lys Lys Glu Arg Leu Asn Lys Leu Leu Lys Arg Gly Phe Leu
 1 5 10 15
 Ala Phe Phe Leu Ser Val Tyr Leu Arg Ala Asp Asp Leu Val Thr Tyr
 20 25 30
 Thr Ile Ile Lys Glu Lys Asp Leu Gly Tyr Gln Arg Phe Leu Ala Lys
 35 40 45
 Lys Cys Leu Arg Gly Lys Thr His Pro Pro Cys Phe Thr Lys Pro Lys
 50 55 60
 Lys Pro Lys Arg Lys Leu Phe Asn Ile Asp Lys Ser Ser His Tyr Tyr
 65 70 75 80
 Gly Thr Ser Val Val Gln Met Ser Trp Leu Gln Ser Arg Glu Lys Phe
 85 90 95
 Glu Asn His Ser Lys Tyr Arg Asp Ile Pro Phe Ala Glu Val Ser Leu
 100 105 110
 Ile Tyr Gly Tyr Lys Gln Phe Phe Pro Lys Lys Glu Arg Tyr Gly Phe
 115 120 125
 Arg Phe Tyr Val Ser Leu Asp Tyr Ala Tyr Gly Phe Phe Leu Lys Asn
 130 135 140
 Lys Gly Val Leu Gly Asp Ser Leu Arg Glu Ser Ser Gln Ile Pro Lys
 145 150 155 160
 Ser Tyr Arg Glu Lys Leu Gln Arg Lys Glu Thr Phe Ile Asn Ala Ile
 165 170 175
 Phe Tyr Gly Ala Gly Ala Asp Phe Leu Tyr Lys Arg Ala Phe Gly Thr
 180 185 190
 Leu Ile Leu Gly Met Asn Phe Val Gly Glu Thr Trp Phe Tyr Glu Thr
 195 200 205
 Lys Ile Phe Lys Lys Trp Ala Lys Asp Pro Leu Ser Val Tyr His Pro
 210 215 220
 Tyr Met Phe Gln Val Met Leu Asn Val Gly Tyr Arg Tyr Arg Phe Ser
 225 230 235 240
 Arg Tyr Lys Asn Trp Ala Ile Glu Leu Gly Ala Arg Ile Pro Phe Leu
 245 250 255
 Thr Asn Asp Tyr Phe Lys Thr Pro Leu Tyr Thr Leu His Phe Lys Arg
 260 265 270

Asn Ile Ser Val Tyr Leu Thr Ser Thr Tyr Asp Phe
 275 280

<210> 55
 <211> 1172
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (75)...(1106)

<400> 55
 taatcggttat taaacatgct atatttcttt tttctataaaa actcaatatt attgaataaa 60
 actagggagat taga atg atc tta aaa cga gtt act gaa gct tta gaa gcg 110
 Met Ile Leu Lys Arg Val Thr Glu Ala Leu Glu Ala
 1 5 10
 tat aaa aat ggc gaa atg ctc att gtt atg gac gat gaa gac aga gaa 158
 Tyr Lys Asn Gly Glu Met Leu Ile Val Met Asp Asp Glu Asp Arg Glu
 15 20 25
 aat gag ggg gat ttg gtt tta gct ggg att ttt tct acc cct gag aaa 206
 Asn Glu Gly Asp Leu Val Leu Ala Gly Ile Phe Ser Thr Pro Glu Lys
 30 35 40
 atc aat ttc atg gcc acg cat gct agg ggg ttg att tgc gtg tct ttg 254
 Ile Asn Phe Met Ala Thr His Ala Arg Gly Leu Ile Cys Val Ser Leu
 45 50 55 60
 acc aaa gat tta gcg aaa aaa ttt gaa tta ccc cct atg gtt agc gtg 302
 Thr Lys Asp Leu Ala Lys Lys Phe Glu Leu Pro Pro Met Val Ser Val
 65 70 75
 aat gat tct aac cat gag acc gct ttc acg gtt tcc att gac gct aaa 350
 Asn Asp Ser Asn His Glu Thr Ala Phe Thr Val Ser Ile Asp Ala Lys
 80 85 90
 gaa gcc aga acc ggg att tct gct ttt gaa agg cat tta acg att gaa 398
 Glu Ala Arg Thr Gly Ile Ser Ala Phe Glu Arg His Leu Thr Ile Glu
 95 100 105
 tta ttg tgt aaa gac acc acc aaa ccg agc gat ttt gtg cgc ccg ggg 446
 Leu Leu Cys Lys Asp Thr Thr Lys Pro Ser Asp Phe Val Arg Pro Gly
 110 115 120
 cat att ttc cct ttg atc gcc aaa gac ggg ggc gtg tta gcg cgc acg 494
 His Ile Phe Pro Leu Ile Ala Lys Asp Gly Gly Val Leu Ala Arg Thr
 125 130 135 140
 ggc cat act gaa gcg agc gtg gat ttg tgc aaa tta gct gga tta aag 542
 Gly His Thr Glu Ala Ser Val Asp Leu Cys Lys Leu Ala Gly Leu Lys
 145 150 155

ccc gtg agc gtg att tgt gaa atc atg aaa gaa gat ggc tct atg gcg	590
Pro Val Ser Val Ile Cys Glu Ile Met Lys Glu Asp Gly Ser Met Ala	
160 165 170	
aga agg ggg gat aaa ttt ttg agc gat ttc gcc ctc aaa cat aac ctt	638
Arg Arg Gly Asp Lys Phe Leu Ser Asp Phe Ala Leu Lys His Asn Leu	
175 180 185	
aaa act ctc tat gtc tct gat ttg att agc tat cgt ttg gaa aat gaa	686
Lys Thr Leu Tyr Val Ser Asp Leu Ile Ser Tyr Arg Leu Glu Asn Glu	
190 195 200	
agt ttg ctg aaa atg ttt tgt caa gaa gaa agg gaa ttt tta aaa cac	734
Ser Leu Leu Lys Met Phe Cys Gln Glu Glu Arg Glu Phe Leu Lys His	
205 210 215 220	
caa acg caa tgc tac act ttt tta gat cac cag caa aaa aac cat tac	782
Gln Thr Gln Cys Tyr Thr Phe Leu Asp His Gln Gln Lys Asn His Tyr	
225 230 235	
gct ttt aag ttt aaa ggc gca aaa acc cat gat tta gcc cct tta gtg	830
Ala Phe Lys Phe Lys Gly Ala Lys Thr His Asp Leu Ala Pro Leu Val	
240 245 250	
cgt ttc cac cct atc aaa gag gat ttt gat ttt tta acg act gat gcg	878
Arg Phe His Pro Ile Lys Glu Asp Phe Asp Phe Leu Thr Thr Asp Ala	
255 260 265	
ttt gaa gtg ttt ttt aaa gcg tta gaa tat tta aag cac gaa ggg ggc	926
Phe Glu Val Phe Phe Lys Ala Leu Glu Tyr Leu Lys His Glu Gly Gly	
270 275 280	
tat ttg atc ttt atg aac acc cat tct aaa gaa aac aat gtc gtt aaa	974
Tyr Leu Ile Phe Met Asn Thr His Ser Lys Glu Asn Asn Val Val Lys	
285 290 295 300	
gat ttt ggg atc ggg gcg ttg gtg tta aaa aat ttg ggg ata aag gat	1022
Asp Phe Gly Ile Gly Ala Leu Val Leu Lys Asn Leu Gly Ile Lys Asp	
305 310 315	
ttc agg ctc tta agc tct tgt gaa gac agg cag tat aag gct ttg agc	1070
Phe Arg Leu Leu Ser Ser Cys Glu Asp Arg Gln Tyr Lys Ala Leu Ser	
320 325 330	
ggg ttt ggg ctt aag ctt gta gaa acg att agc ctt taagaggctc	1116
Gly Phe Gly Leu Lys Leu Val Glu Thr Ile Ser Leu	
335 340	
gttaagtttt attgaatgtg ttgtaatgtt tttaagggtat aataaactct ttttaa	1172
<210> 56	
<211> 344	
<212> PRT	
<213> Helicobacter pylori	

<400> 56
Met Ile Leu Lys Arg Val Thr Glu Ala Leu Glu Ala Tyr Lys Asn Gly
1 5 10 15
Glu Met Leu Ile Val Met Asp Asp Glu Asp Arg Glu Asn Glu Gly Asp
20 25 30
Leu Val Leu Ala Gly Ile Phe Ser Thr Pro Glu Lys Ile Asn Phe Met
35 40 45
Ala Thr His Ala Arg Gly Leu Ile Cys Val Ser Leu Thr Lys Asp Leu
50 55 60
Ala Lys Lys Phe Glu Leu Pro Pro Met Val Ser Val Asn Asp Ser Asn
65 70 75 80
His Glu Thr Ala Phe Thr Val Ser Ile Asp Ala Lys Glu Ala Arg Thr
85 90 95
Gly Ile Ser Ala Phe Glu Arg His Leu Thr Ile Glu Leu Leu Cys Lys
100 105 110
Asp Thr Thr Lys Pro Ser Asp Phe Val Arg Pro Gly His Ile Phe Pro
115 120 125
Leu Ile Ala Lys Asp Gly Gly Val Leu Ala Arg Thr Gly His Thr Glu
130 135 140
Ala Ser Val Asp Leu Cys Lys Leu Ala Gly Leu Lys Pro Val Ser Val
145 150 155 160
Ile Cys Glu Ile Met Lys Glu Asp Gly Ser Met Ala Arg Arg Gly Asp
165 170 175
Lys Phe Leu Ser Asp Phe Ala Leu Lys His Asn Leu Lys Thr Leu Tyr
180 185 190
Val Ser Asp Leu Ile Ser Tyr Arg Leu Glu Asn Glu Ser Leu Leu Lys
195 200 205
Met Phe Cys Gln Glu Glu Arg Glu Phe Leu Lys His Gln Thr Gln Cys
210 215 220
Tyr Thr Phe Leu Asp His Gln Gln Lys Asn His Tyr Ala Phe Lys Phe
225 230 235 240
Lys Gly Ala Lys Thr His Asp Leu Ala Pro Leu Val Arg Phe His Pro
245 250 255
Ile Lys Glu Asp Phe Asp Phe Leu Thr Thr Asp Ala Phe Glu Val Phe
260 265 270
Phe Lys Ala Leu Glu Tyr Leu Lys His Glu Gly Gly Tyr Leu Ile Phe
275 280 285
Met Asn Thr His Ser Lys Glu Asn Asn Val Val Lys Asp Phe Gly Ile
290 295 300
Gly Ala Leu Val Leu Lys Asn Leu Gly Ile Lys Asp Phe Arg Leu Leu
305 310 315 320
Ser Ser Cys Glu Asp Arg Gln Tyr Lys Ala Leu Ser Gly Phe Gly Leu
325 330 335
Lys Leu Val Glu Thr Ile Ser Leu
340

<210> 57
<211> 394
<212> DNA
<213> Helicobacter pylori

<220>
<221> CDS
<222> (51) ... (341)

<400> 57
gatttatacct tgcataaaac aatctcgctt ggcgataaaa aacgctctaa aaa ctt 56
Lys Leu
1

cat ttt aaa gcg ttt cac gca ctt ttc tat cct agc aat aga gac aat 104
His Phe Lys Ala Phe His Ala Leu Phe Tyr Pro Ser Asn Arg Asp Asn
5 10 15

atc tat gcc aat cat tta aaa tta ttg gat aat gaa atc agt gaa aaa 152
Ile Tyr Ala Asn His Leu Lys Leu Leu Asp Asn Glu Ile Ser Glu Lys
20 25 30

gac att ttt aat aaa gcc atc aat caa aaa cga att caa atg gct ctt 200
Asp Ile Phe Asn Lys Ala Ile Asn Gln Lys Arg Ile Gln Met Ala Leu
35 40 45 50

aat ctc atc ttt aag ctt gtt ttt gcc ttt gtt agt aac cac ttc ttc 248
Asn Leu Ile Phe Lys Leu Val Phe Ala Phe Val Ser Asn His Phe Phe
55 60 65

cac gct ttt aga cga cag aat ctc tat aat cgt gtc ttt aat cgc tgt 296
His Ala Phe Arg Arg Gln Asn Leu Tyr Asn Arg Val Phe Asn Arg Cys
70 75 80

gtc ttt aac ctt gac ttc att caa aag ctt ttc att act caa ttc 341
Val Phe Asn Leu Asp Phe Ile Gln Lys Leu Phe Ile Thr Gln Phe
85 90 95

taacgaaata gaagccttaa ggtagcgtct gccattttga gagaccagat tca 394

<210> 58
<211> 97
<212> PRT
<213> Helicobacter pylori

<400> 58
Lys Leu His Phe Lys Ala Phe His Ala Leu Phe Tyr Pro Ser Asn Arg
1 5 10 15
Asp Asn Ile Tyr Ala Asn His Leu Lys Leu Leu Asp Asn Glu Ile Ser
20 25 30
Glu Lys Asp Ile Phe Asn Lys Ala Ile Asn Gln Lys Arg Ile Gln Met
35 40 45
Ala Leu Asn Leu Ile Phe Lys Leu Val Phe Ala Phe Val Ser Asn His
50 55 60
Phe Phe His Ala Phe Arg Arg Gln Asn Leu Tyr Asn Arg Val Phe Asn
65 70 75 80
Arg Cys Val Phe Asn Leu Asp Phe Ile Gln Lys Leu Phe Ile Thr Gln
85 90 95
Phe

<210> 59
<211> 360

<220>

<221> CDS

<222> (51)...(392)

<400> 61

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atttacaaag cgtgttggat acccccaaga tgattcgttt ggaaaattga atg cgc      56
                                     Met Arg
                                     1

ttt ttg aac aac aaa cat aga gaa aag ggc tta aag gct gaa gaa gaa      104
Phe Leu Asn Asn Lys His Arg Glu Lys Gly Leu Lys Ala Glu Glu Glu
      5                      10                      15

gct tgc gga ttt tta aaa tcg tta ggt ttt gaa atg gtg gag agg aac      152
Ala Cys Gly Phe Leu Lys Ser Leu Gly Phe Glu Met Val Glu Arg Asn
      20                      25                      30

ttt ttt tca caa ttt ggc gaa att gat att atc gct ttg aaa aaa ggg      200
Phe Phe Ser Gln Phe Gly Glu Ile Asp Ile Ile Ala Leu Lys Lys Gly
      35                      40                      45                      50

gtt ttg cat ttc att gaa gtc aaa agc ggg gaa aat ttt gat ccc att      248
Val Leu His Phe Ile Glu Val Lys Ser Gly Glu Asn Phe Asp Pro Ile
                        55                      60                      65

tat gcg atc acg ccg agc aaa tta aaa aag atg att aaa acg atc cgc      296
Tyr Ala Ile Thr Pro Ser Lys Leu Lys Lys Met Ile Lys Thr Ile Arg
                        70                      75                      80

tgt tat ttg tcc caa aaa gat ccc aat agc gat ttt tgc ata gac gct      344
Cys Tyr Leu Ser Gln Lys Asp Pro Asn Ser Asp Phe Cys Ile Asp Ala
      85                      90                      95

ctt att gtg aaa aat ggt aaa ttt gag ctt tta gaa aat atc act ttt      392
Leu Ile Val Lys Asn Gly Lys Phe Glu Leu Leu Glu Asn Ile Thr Phe
      100                      105                      110

tagattttta cagaaagtaa atgcgatttc attaacattc ttaagctaata ata      445
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<210> 62

<211> 114

<212> PRT

<213> Helicobacter pylori

<400> 62

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Met Arg Phe Leu Asn Asn Lys His Arg Glu Lys Gly Leu Lys Ala Glu
      1                      5                      10                      15
Glu Glu Ala Cys Gly Phe Leu Lys Ser Leu Gly Phe Glu Met Val Glu
      20                      25                      30
Arg Asn Phe Phe Ser Gln Phe Gly Glu Ile Asp Ile Ile Ala Leu Lys
      35                      40                      45
Lys Gly Val Leu His Phe Ile Glu Val Lys Ser Gly Glu Asn Phe Asp
      50                      55                      60
Pro Ile Tyr Ala Ile Thr Pro Ser Lys Leu Lys Lys Met Ile Lys Thr
      65                      70                      75                      80
```

Ile Arg Cys Tyr Leu Ser Gln Lys Asp Pro Asn Ser Asp Phe Cys Ile
85 90 95
Asp Ala Leu Ile Val Lys Asn Gly Lys Phe Glu Leu Leu Glu Asn Ile
100 105 110
Thr Phe

<210> 63
<211> 831
<212> DNA
<213> Helicobacter pylori

<220>
<221> CDS
<222> (86)...(763)

<400> 63
cggttaaaaag cttggttttaa tgagttttta aaacttaatt gctacaatta aggaaatttt 60
caataaggct tagagaaact ttttc atg gaa cac aga gta ttt act att gct 112
Met Glu His Arg Val Phe Thr Ile Ala
1 5

aat ttt ttt agc tcc aat cat gat ttt atc acc ggg ttt ttt gtc gtt 160
Asn Phe Phe Ser Ser Asn His Asp Phe Ile Thr Gly Phe Phe Val Val
10 15 20 25

ttg aca gcg gtt ttg atg ttt tta atc tcg ctt ggc gcg tcg cgc aaa 208
Leu Thr Ala Val Leu Met Phe Leu Ile Ser Leu Gly Ala Ser Arg Lys
30 35 40

atg cag atg gta cct atg ggt ttg cag aat gtg tat gag agc atc att 256
Met Gln Met Val Pro Met Gly Leu Gln Asn Val Tyr Glu Ser Ile Ile
45 50 55

agc gcg att ttg agc gtg gct aag gat att ata ggc gaa gaa tta gcc 304
Ser Ala Ile Leu Ser Val Ala Lys Asp Ile Ile Gly Glu Glu Leu Ala
60 65 70

cgc aaa tac ttc ccc cta gct ggc acg atc gct ttg tat gtc ttt ttt 352
Arg Lys Tyr Phe Pro Leu Ala Gly Thr Ile Ala Leu Tyr Val Phe Phe
75 80 85

tct aac atg ata ggc atc att cct ggc ttt gaa tcc cct acg gct agc 400
Ser Asn Met Ile Gly Ile Ile Pro Gly Phe Glu Ser Pro Thr Ala Ser
90 95 100 105

tgg agc ttt acg ctg gtt tta gcg ctg att gtg ttt ttt tat tac cat 448
Trp Ser Phe Thr Leu Val Leu Ala Leu Ile Val Phe Phe Tyr Tyr His
110 115 120

ttt gaa ggc att aga gtg cag ggc ttt ttt aag tat ttc gct cat ttt 496
Phe Glu Gly Ile Arg Val Gln Gly Phe Phe Lys Tyr Phe Ala His Phe
125 130 135

gca ggt cct gtg aaa tgg ctc gcc cct ttc atg ttc cct att gag atc 544
Ala Gly Pro Val Lys Trp Leu Ala Pro Phe Met Phe Pro Ile Glu Ile
140 145 150

atc tcg cat ttt tct agg atc gtg tct tta tcg ttt cgt ttg ttt ggg 592
Ile Ser His Phe Ser Arg Ile Val Ser Leu Ser Phe Arg Leu Phe Gly
155 160 165

aat atc aag ggc gat gac atg ttc ttg ctc atc atg ctt tta tta gtg 640
Asn Ile Lys Gly Asp Asp Met Phe Leu Leu Ile Met Leu Leu Leu Val
170 175 180 185

cct tgg gcg gtt cct gta gcg cct ttt atg gtg ttg ttt ttc atg ggg 688
Pro Trp Ala Val Pro Val Ala Pro Phe Met Val Leu Phe Phe Met Gly
190 195 200

att tta caa gct ttt gtt ttt atg atc ctc act tat gtg tat ttg gca 736
Ile Leu Gln Ala Phe Val Phe Met Ile Leu Thr Tyr Val Tyr Leu Ala
205 210 215

ggg gct gtt tta acc gat gaa ggg cat taagcaataa cattcttggt 783
Gly Ala Val Leu Thr Asp Glu Gly His
220 225

tggctttaat attgtttttt aaaactttgt tttatggtaa agcttttta 831

<210> 64
<211> 226
<212> PRT
<213> *Helicobacter pylori*

<400> 64
Met Glu His Arg Val Phe Thr Ile Ala Asn Phe Phe Ser Ser Asn His
1 5 10 15
Asp Phe Ile Thr Gly Phe Phe Val Val Leu Thr Ala Val Leu Met Phe
20 25 30
Leu Ile Ser Leu Gly Ala Ser Arg Lys Met Gln Met Val Pro Met Gly
35 40 45
Leu Gln Asn Val Tyr Glu Ser Ile Ile Ser Ala Ile Leu Ser Val Ala
50 55 60
Lys Asp Ile Ile Gly Glu Glu Leu Ala Arg Lys Tyr Phe Pro Leu Ala
65 70 75 80
Gly Thr Ile Ala Leu Tyr Val Phe Phe Ser Asn Met Ile Gly Ile Ile
85 90 95
Pro Gly Phe Glu Ser Pro Thr Ala Ser Trp Ser Phe Thr Leu Val Leu
100 105 110
Ala Leu Ile Val Phe Phe Tyr Tyr His Phe Glu Gly Ile Arg Val Gln
115 120 125
Gly Phe Phe Lys Tyr Phe Ala His Phe Ala Gly Pro Val Lys Trp Leu
130 135 140
Ala Pro Phe Met Phe Pro Ile Glu Ile Ile Ser His Phe Ser Arg Ile
145 150 155 160
Val Ser Leu Ser Phe Arg Leu Phe Gly Asn Ile Lys Gly Asp Asp Met
165 170 175
Phe Leu Leu Ile Met Leu Leu Leu Val Pro Trp Ala Val Pro Val Ala

gct tcc cct aaa atc cta gcc cct agc atg aac act aac atg ctc aat 488
 Ala Ser Pro Lys Ile Leu Ala Pro Ser Met Asn Thr Asn Met Leu Asn
 135 140 145

tcc cct atc act caa agt aat tta aaa cgc ttg aaa gat tcc aac cac 536
 Ser Pro Ile Thr Gln Ser Asn Leu Lys Arg Leu Lys Asp Ser Asn His
 150 155 160

att att tta gac acc aaa aac gcc ctt tta gca tgc gac act aaa ggc 584
 Ile Ile Leu Asp Thr Lys Asn Ala Leu Leu Ala Cys Asp Thr Lys Gly
 165 170 175

gat ggg gcg atg gct gag cct tta gaa atc ctt ttt aaa gcc gct caa 632
 Asp Gly Ala Met Ala Glu Pro Leu Glu Ile Leu Phe Lys Ala Ala Gln
 180 185 190

acg ctc cta aaa gac gct tat ttt gaa aac aga gaa gtc ata gtc atg 680
 Thr Leu Leu Lys Asp Ala Tyr Phe Glu Asn Arg Glu Val Ile Val Met
 195 200 205 210

ggc ggc gcg agt ata gaa aag att gac agc gtt cga acg att agc aat 728
 Gly Gly Ala Ser Ile Glu Lys Ile Asp Ser Val Arg Thr Ile Ser Asn
 215 220 225

act ttc tagcgggatt caagcgagcgc ctttagcttt ggcgttatat ttttaaggag 784
 Thr Phe

cca 787

<210> 66
 <211> 228
 <212> PRT
 <213> Helicobacter pylori

<400> 66
 Met Asn Phe Leu Glu Asp Leu Phe Tyr Pro Leu Arg Leu Leu Glu Asn
 1 5 10 15
 Lys Arg Val Leu Leu Leu Val Ser Gly Ser Ile Ala Ala Tyr Lys Ser
 20 25 30
 Leu Glu Leu Val Arg Leu Leu Phe Lys Ser Gly Ala Ser Ile Gln Val
 35 40 45
 Val Met Ser Lys Gly Ala Lys Lys Phe Ile Lys Pro Leu Ser Phe Glu
 50 55 60
 Ala Leu Ser His His Lys Val Leu His Asp Arg Asn Glu Lys Trp Tyr
 65 70 75 80
 Tyr Asn His Gln Asn Ala Leu His His Asn His Ile Ala Cys Ala Ala
 85 90 95
 Asn Ala Asp Leu Leu Ile Phe Ala Pro Leu Ser Thr Asn Ser Leu Ser
 100 105 110
 Lys Ile Ala His Ala Leu Ala Asp Asn Ile Val Ser Ala Thr Phe Leu
 115 120 125
 Ala Cys Ala Ser Pro Lys Ile Leu Ala Pro Ser Met Asn Thr Asn Met
 130 135 140
 Leu Asn Ser Pro Ile Thr Gln Ser Asn Leu Lys Arg Leu Lys Asp Ser

145		150		155		160
Asn	His	Ile	Ile	Leu	Asp	Thr
		165		170		175
Lys	Gly	Asp	Gly	Ala	Met	Ala
		180		185		190
Ala	Gln	Thr	Leu	Leu	Lys	Asp
		195		200		205
Val	Met	Gly	Gly	Ala	Ser	Ile
		210		215		220
Ser	Asn	Thr	Phe			
225						

<210> 67
 <211> 1078
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (71)...(1009)

<400> 67
 tcccaagccc taaaggcgct tcaatcattg atttttaaagg cagttatgaa gagtattttgg 60
 cgagcaaaaa atg aaa ccg caa gac att gaa atc gtt caa agc gtt tta 109
 Met Lys Pro Gln Asp Ile Glu Ile Val Gln Ser Val Leu
 1 5 10

gag att aca gga ccg att aag cct act gaa gtg tat gat aaa gcc aaa 157
 Glu Ile Thr Gly Pro Ile Lys Pro Thr Glu Val Tyr Asp Lys Ala Lys
 15 20 25

gag ctt ttt gaa aaa ggt gag att aca aac atg ttt gat tgt ggg ggc 205
 Glu Leu Phe Glu Lys Gly Glu Ile Thr Asn Met Phe Asp Cys Gly Gly
 30 35 40 45

aaa acc ccg cac cag agc gtt agt tct tat att tat aca gcc tta aac 253
 Lys Thr Pro His Gln Ser Val Ser Ser Tyr Ile Tyr Thr Ala Leu Asn
 50 55 60

aag ggc gaa gaa ctg cct ttt aaa aaa gtg caa gaa aac cca acc tta 301
 Lys Gly Glu Glu Leu Pro Phe Lys Lys Val Gln Glu Asn Pro Thr Leu
 65 70 75

atc gct tta aaa gac gcg gct aaa gag cta ggt tta gac gct caa aaa 349
 Ile Ala Leu Lys Asp Ala Ala Lys Glu Leu Gly Leu Asp Ala Gln Lys
 80 85 90

ata agc gct cca agc tct aaa atc gcg cat gaa agg gat ttg cac ccc 397
 Ile Ser Ala Pro Ser Ser Lys Ile Ala His Glu Arg Asp Leu His Pro
 95 100 105

ttt tta acc tac atg gct att aat aac gaa aat ttg aaa tgc tac acg 445
 Phe Leu Thr Tyr Met Ala Ile Asn Asn Glu Asn Leu Lys Cys Tyr Thr
 110 115 120 125

aaa acc att ttt cat gaa gag agt tca aaa tca ata aaa ggc atg gac	493
Lys Thr Ile Phe His Glu Glu Ser Ser Lys Ser Ile Lys Gly Met Asp	
130 135 140	
agg tgg ctt tat ccg gac atg gtg ggg gtt agg ttt ttg cac gct gaa	541
Arg Trp Leu Tyr Pro Asp Met Val Gly Val Arg Phe Leu His Ala Glu	
145 150 155	
tta tct aat gaa aat tta atc gct ttt tct aag aaa ttt gac act tta	589
Leu Ser Asn Glu Asn Leu Ile Ala Phe Ser Lys Lys Phe Asp Thr Leu	
160 165 170	
ccc att aaa ctg gtg agc ttt gaa ttg aaa aaa gaa atc agc gtg cat	637
Pro Ile Lys Leu Val Ser Phe Glu Leu Lys Lys Glu Ile Ser Val His	
175 180 185	
aat tgc agg gag tgt tac ttt caa gcg att tcc aac agc tcg tgg gct	685
Asn Cys Arg Glu Cys Tyr Phe Gln Ala Ile Ser Asn Ser Ser Trp Ala	
190 195 200 205	
aat gaa ggg tat tta gtg ggc cgt cat att gat acg cac aat cct caa	733
Asn Glu Gly Tyr Leu Val Gly Arg His Ile Asp Thr His Asn Pro Gln	
210 215 220	
ctc atg gat ttg ttg aag cgt ttg cat gcg agt ttt ggg att ggc gtg	781
Leu Met Asp Leu Leu Lys Arg Leu His Ala Ser Phe Gly Ile Gly Val	
225 230 235	
att gat tta aga act aat gag gat aaa agc gct att tta ttg aac gct	829
Ile Asp Leu Arg Thr Asn Glu Asp Lys Ser Ala Ile Leu Leu Asn Ala	
240 245 250	
aaa tac aaa gaa aag att gat tac acc gtg gct tca gag ctt agc gcg	877
Lys Tyr Lys Glu Lys Ile Asp Tyr Thr Val Ala Ser Glu Leu Ser Ala	
255 260 265	
aaa aat gaa aaa ttc agc ggt ttt tta aag agc gtt gtg gat tat gac	925
Lys Asn Glu Lys Phe Ser Gly Phe Leu Lys Ser Val Val Asp Tyr Asp	
270 275 280 285	
cca aac cac cca caa cgc tat aaa gat gaa ttt gat gag gtt aaa aag	973
Pro Asn His Pro Gln Arg Tyr Lys Asp Glu Phe Asp Glu Val Lys Lys	
290 295 300	
aaa gag gag tta tac cct aac cca tcg ctt tct ttt taaaaatgag	1019
Lys Glu Glu Leu Tyr Pro Asn Pro Ser Leu Ser Phe	
305 310	
attttaaaaa acgctttaag tgtttttgta aaaaatagca aagagcttga ttttaatca	1078
<210> 68	
<211> 313	
<212> PRT	
<213> Helicobacter pylori	

<400> 68
Met Lys Pro Gln Asp Ile Glu Ile Val Gln Ser Val Leu Glu Ile Thr
1 5 10 15
Gly Pro Ile Lys Pro Thr Glu Val Tyr Asp Lys Ala Lys Glu Leu Phe
20 25 30
Glu Lys Gly Glu Ile Thr Asn Met Phe Asp Cys Gly Gly Lys Thr Pro
35 40 45
His Gln Ser Val Ser Ser Tyr Ile Tyr Thr Ala Leu Asn Lys Gly Glu
50 55 60
Glu Leu Pro Phe Lys Lys Val Gln Glu Asn Pro Thr Leu Ile Ala Leu
65 70 75 80
Lys Asp Ala Ala Lys Glu Leu Gly Leu Asp Ala Gln Lys Ile Ser Ala
85 90 95
Pro Ser Ser Lys Ile Ala His Glu Arg Asp Leu His Pro Phe Leu Thr
100 105 110
Tyr Met Ala Ile Asn Asn Glu Asn Leu Lys Cys Tyr Thr Lys Thr Ile
115 120 125
Phe His Glu Glu Ser Ser Lys Ser Ile Lys Gly Met Asp Arg Trp Leu
130 135 140
Tyr Pro Asp Met Val Gly Val Arg Phe Leu His Ala Glu Leu Ser Asn
145 150 155 160
Glu Asn Leu Ile Ala Phe Ser Lys Lys Phe Asp Thr Leu Pro Ile Lys
165 170 175
Leu Val Ser Phe Glu Leu Lys Lys Glu Ile Ser Val His Asn Cys Arg
180 185 190
Glu Cys Tyr Phe Gln Ala Ile Ser Asn Ser Ser Trp Ala Asn Glu Gly
195 200 205
Tyr Leu Val Gly Arg His Ile Asp Thr His Asn Pro Gln Leu Met Asp
210 215 220
Leu Leu Lys Arg Leu His Ala Ser Phe Gly Ile Gly Val Ile Asp Leu
225 230 235 240
Arg Thr Asn Glu Asp Lys Ser Ala Ile Leu Leu Asn Ala Lys Tyr Lys
245 250 255
Glu Lys Ile Asp Tyr Thr Val Ala Ser Glu Leu Ser Ala Lys Asn Glu
260 265 270
Lys Phe Ser Gly Phe Leu Lys Ser Val Val Asp Tyr Asp Pro Asn His
275 280 285
Pro Gln Arg Tyr Lys Asp Glu Phe Asp Glu Val Lys Lys Lys Glu Glu
290 295 300
Leu Tyr Pro Asn Pro Ser Leu Ser Phe
305 310

<210> 69
<211> 444
<212> DNA
<213> Helicobacter pylori

<220>
<221> CDS
<222> (112)...(375)

<400> 69
aactgcctt aggcgcgatg gcgtttaagg aagtcaagct ttttgaattt ggcgagcaat 60
taagggattt tgtactatat tgaagatgtg atccaagcga gcgtgaaagc g atg aag 117

Met Lys
1

gct caa aaa agc ggg gtt tat aat gtg ggt tat tcc caa gcc aga agt 165
Ala Gln Lys Ser Gly Val Tyr Asn Val Gly Tyr Ser Gln Ala Arg Ser
5 10 15

tat aat gaa atc gtt agc att tta aaa gag cat tta ggg gat ttt aaa 213
Tyr Asn Glu Ile Val Ser Ile Leu Lys Glu His Leu Gly Asp Phe Lys
20 25 30

gtg agt tat atc aaa aac cct tat gct ttc ttc caa aag cac acc caa 261
Val Ser Tyr Ile Lys Asn Pro Tyr Ala Phe Phe Gln Lys His Thr Gln
35 40 45 50

gca cac att gag cct gct att ttg gat ttg gat tac acc cct tta tac 309
Ala His Ile Glu Pro Ala Ile Leu Asp Leu Asp Tyr Thr Pro Leu Tyr
55 60 65

gat ttg gaa agc ggc att aaa gat tat ttg ccc cat atc cat gcg att 357
Asp Leu Glu Ser Gly Ile Lys Asp Tyr Leu Pro His Ile His Ala Ile
70 75 80

ttt aaa gga cag tgc gca tgaaaaaaat cttagtcata ggcgatctga 405
Phe Lys Gly Gln Cys Ala
85

tcgctgatta ttatttgtgg gggaagagcg aacggcttt 444

<210> 70
<211> 88
<212> PRT
<213> Helicobacter pylori

<400> 70
Met Lys Ala Gln Lys Ser Gly Val Tyr Asn Val Gly Tyr Ser Gln Ala
1 5 10 15
Arg Ser Tyr Asn Glu Ile Val Ser Ile Leu Lys Glu His Leu Gly Asp
20 25 30
Phe Lys Val Ser Tyr Ile Lys Asn Pro Tyr Ala Phe Phe Gln Lys His
35 40 45
Thr Gln Ala His Ile Glu Pro Ala Ile Leu Asp Leu Asp Tyr Thr Pro
50 55 60
Leu Tyr Asp Leu Glu Ser Gly Ile Lys Asp Tyr Leu Pro His Ile His
65 70 75 80
Ala Ile Phe Lys Gly Gln Cys Ala
85

<210> 71
<211> 822
<212> DNA
<213> Helicobacter pylori

<220>

<221> CDS

<222> (153)...(728)

<400> 71

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cagcatgccg ttgttttttaa tggggatttt tttaagcaaa atttccgttt cttacaggaa 60
atTTTTcaat cttttgtcta aaattttaat ggggggttttt gggctttata tcctttatat 120
ggggatcatg ctcattaacc acaaaatgcc tc atg cca tgc atc atc aaa aca 173
                               Met Pro Cys Ile Ile Lys Thr
                               1                               5

aca cca ctc agc atg atc ata aag gag tgc att cgc atg aac act aac 221
Thr Pro Leu Ser Met Ile Ile Lys Glu Cys Ile Arg Met Asn Thr Asn
      10                               15                               20

aaa gcc ctt ttt ttg gac aga gac ggc att atc aat att gat aaa ggc 269
Lys Ala Leu Phe Leu Asp Arg Asp Gly Ile Ile Asn Ile Asp Lys Gly
      25                               30                               35

tat gtg agt caa aaa gaa gat ttt gag ttt caa aaa ggg att ttt gaa 317
Tyr Val Ser Gln Lys Glu Asp Phe Glu Phe Gln Lys Gly Ile Phe Glu
      40                               45                               50                               55

ttg cta aag cat gcg aaa tct tta ggc tac aaa ctg ctt tta atc acc 365
Leu Leu Lys His Ala Lys Ser Leu Gly Tyr Lys Leu Leu Leu Ile Thr
                               60                               65                               70

aac caa tct ggg atc aac cga ggc tat tac acc ctt aaa gat ttt gaa 413
Asn Gln Ser Gly Ile Asn Arg Gly Tyr Tyr Thr Leu Lys Asp Phe Glu
                               75                               80                               85

caa ctc acc caa tac ctc caa gaa agc ttg ttc aaa gaa tta ggt ttt 461
Gln Leu Thr Gln Tyr Leu Gln Glu Ser Leu Phe Lys Glu Leu Gly Phe
      90                               95                               100

aat ctg gat ggc atc tat ttt tgc agg cac gcc cca gaa gaa aat tgc 509
Asn Leu Asp Gly Ile Tyr Phe Cys Arg His Ala Pro Glu Glu Asn Cys
      105                               110                               115

gct tgc agg aag cca aag cct tct ttg att ttg caa gct gct aaa gag 557
Ala Cys Arg Lys Pro Lys Pro Ser Leu Ile Leu Gln Ala Ala Lys Glu
      120                               125                               130                               135

cat caa att tgc ttg gag caa tct ttt atg ata ggc gat aaa gag agc 605
His Gln Ile Cys Leu Glu Gln Ser Phe Met Ile Gly Asp Lys Glu Ser
                               140                               145                               150

gac atg tta gcc ggc ttg aac gct aaa gtt aaa aat aac ctt ttg ctc 653
Asp Met Leu Ala Gly Leu Asn Ala Lys Val Lys Asn Asn Leu Leu Leu
      155                               160                               165

att caa aac cct tta aaa act cct cat tct tgg ata caa tgt aaa gat 701
Ile Gln Asn Pro Leu Lys Thr Pro His Ser Trp Ile Gln Cys Lys Asp
      170                               175                               180

ttt aaa gag atg ata gat cta atc aaa taaggacaag aatgcgttat 748
```

Phe Lys Glu Met Ile Asp Leu Ile Lys
 185 190

attgatgatg aattagaaaa tcaaacgatt ttaatcaccg gtggggctgg cttttagaggc 808
 agtaatctag cctt 822

<210> 72
 <211> 192
 <212> PRT
 <213> Helicobacter pylori

<400> 72
 Met Pro Cys Ile Ile Lys Thr Thr Pro Leu Ser Met Ile Ile Lys Glu
 1 5 10 15
 Cys Ile Arg Met Asn Thr Asn Lys Ala Leu Phe Leu Asp Arg Asp Gly
 20 25 30
 Ile Ile Asn Ile Asp Lys Gly Tyr Val Ser Gln Lys Glu Asp Phe Glu
 35 40 45
 Phe Gln Lys Gly Ile Phe Glu Leu Leu Lys His Ala Lys Ser Leu Gly
 50 55 60
 Tyr Lys Leu Leu Leu Ile Thr Asn Gln Ser Gly Ile Asn Arg Gly Tyr
 65 70 75 80
 Tyr Thr Leu Lys Asp Phe Glu Gln Leu Thr Gln Tyr Leu Gln Glu Ser
 85 90 95
 Leu Phe Lys Glu Leu Gly Phe Asn Leu Asp Gly Ile Tyr Phe Cys Arg
 100 105 110
 His Ala Pro Glu Glu Asn Cys Ala Cys Arg Lys Pro Lys Pro Ser Leu
 115 120 125
 Ile Leu Gln Ala Ala Lys Glu His Gln Ile Cys Leu Glu Gln Ser Phe
 130 135 140
 Met Ile Gly Asp Lys Glu Ser Asp Met Leu Ala Gly Leu Asn Ala Lys
 145 150 155 160
 Val Lys Asn Asn Leu Leu Leu Ile Gln Asn Pro Leu Lys Thr Pro His
 165 170 175
 Ser Trp Ile Gln Cys Lys Asp Phe Lys Glu Met Ile Asp Leu Ile Lys
 180 185 190

<210> 73
 <211> 831
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (88)...(756)

<400> 73
 aacaaagagc gagagagcat caagaaagag atgaaaaaga gcttgaagaa agaagaaaag 60
 ctttagaaat gaataagaag taggcct atg cca gct agg caa tct ttt aca gat 114
 Met Pro Ala Arg Gln Ser Phe Thr Asp
 1 5

ttg aaa aac ctg gtt ttg tgc gat ata ggc aac acg cgt atc cat ttt 162
 Leu Lys Asn Leu Val Leu Cys Asp Ile Gly Asn Thr Arg Ile His Phe

10	15	20	25	
gca caa aac tat cag ctc ttt tca agc gct aaa gaa gat tta aag cgt				210
Ala Gln Asn Tyr Gln Leu Phe Ser Ser Ala Lys Glu Asp Leu Lys Arg				
	30	35	40	
ttg ggt att caa aag gaa att ttt tac att agc gtg aat gaa gaa aat				258
Leu Gly Ile Gln Lys Glu Ile Phe Tyr Ile Ser Val Asn Glu Glu Asn				
	45	50	55	
gaa aaa gcc ctt ttg aat tgt tac cct aac gct aaa aat att gca ggg				306
Glu Lys Ala Leu Leu Asn Cys Tyr Pro Asn Ala Lys Asn Ile Ala Gly				
	60	65	70	
ttt ttt cat tta gaa acc gac tat gta ggg ctt ggg ata gac cgg caa				354
Phe Phe His Leu Glu Thr Asp Tyr Val Gly Leu Gly Ile Asp Arg Gln				
	75	80	85	
atg gcg tgt ctg gcg gta aat aat ggc gtg gtg gtg gat gcc ggg agt				402
Met Ala Cys Leu Ala Val Asn Asn Gly Val Val Val Asp Ala Gly Ser				
	90	95	100	105
gcg att acg ata gat tta atc aaa gag ggc aag cat tta gga ggg tgt				450
Ala Ile Thr Ile Asp Leu Ile Lys Glu Gly Lys His Leu Gly Gly Cys				
	110	115	120	
att tta ccc ggt tta gcc caa tat att cat gcg tat aaa aaa agc gct				498
Ile Leu Pro Gly Leu Ala Gln Tyr Ile His Ala Tyr Lys Lys Ser Ala				
	125	130	135	
aaa att tta gag caa cct ttc aag gcc tta gat tct tta gaa gtt tta				546
Lys Ile Leu Glu Gln Pro Phe Lys Ala Leu Asp Ser Leu Glu Val Leu				
	140	145	150	
cct aaa agc act aga gac gct gtg aat tac ggc atg gtt ttg agc gtc				594
Pro Lys Ser Thr Arg Asp Ala Val Asn Tyr Gly Met Val Leu Ser Val				
	155	160	165	
att gct tgt atc cag cat tta gcc aaa aat caa aaa atc tat ctt tgt				642
Ile Ala Cys Ile Gln His Leu Ala Lys Asn Gln Lys Ile Tyr Leu Cys				
	170	175	180	185
ggg ggc gat gcg aag tat ttg agc gcg ttt tta ccc cat tct gtt tgc				690
Gly Gly Asp Ala Lys Tyr Leu Ser Ala Phe Leu Pro His Ser Val Cys				
	190	195	200	
aag gag cgt ttg gtt ttt gac ggg atg gaa atc gct ctt aaa aaa gca				738
Lys Glu Arg Leu Val Phe Asp Gly Met Glu Ile Ala Leu Lys Lys Ala				
	205	210	215	
ggg ata cta gaa tgc aaa tgatgcacaa tttgagtttt ttgggcatgt				786
Gly Ile Leu Glu Cys Lys				
	220			
ttttagccgc tttgagcatg tcttttagggc attgtgtggg catgt				831

<210> 74
 <211> 223
 <212> PRT
 <213> Helicobacter pylori

<400> 74
 Met Pro Ala Arg Gln Ser Phe Thr Asp Leu Lys Asn Leu Val Leu Cys
 1 5 10 15
 Asp Ile Gly Asn Thr Arg Ile His Phe Ala Gln Asn Tyr Gln Leu Phe
 20 25 30
 Ser Ser Ala Lys Glu Asp Leu Lys Arg Leu Gly Ile Gln Lys Glu Ile
 35 40 45
 Phe Tyr Ile Ser Val Asn Glu Glu Asn Glu Lys Ala Leu Leu Asn Cys
 50 55 60
 Tyr Pro Asn Ala Lys Asn Ile Ala Gly Phe Phe His Leu Glu Thr Asp
 65 70 75 80
 Tyr Val Gly Leu Gly Ile Asp Arg Gln Met Ala Cys Leu Ala Val Asn
 85 90 95
 Asn Gly Val Val Val Asp Ala Gly Ser Ala Ile Thr Ile Asp Leu Ile
 100 105 110
 Lys Glu Gly Lys His Leu Gly Gly Cys Ile Leu Pro Gly Leu Ala Gln
 115 120 125
 Tyr Ile His Ala Tyr Lys Lys Ser Ala Lys Ile Leu Glu Gln Pro Phe
 130 135 140
 Lys Ala Leu Asp Ser Leu Glu Val Leu Pro Lys Ser Thr Arg Asp Ala
 145 150 155 160
 Val Asn Tyr Gly Met Val Leu Ser Val Ile Ala Cys Ile Gln His Leu
 165 170 175
 Ala Lys Asn Gln Lys Ile Tyr Leu Cys Gly Gly Asp Ala Lys Tyr Leu
 180 185 190
 Ser Ala Phe Leu Pro His Ser Val Cys Lys Glu Arg Leu Val Phe Asp
 195 200 205
 Gly Met Glu Ile Ala Leu Lys Lys Ala Gly Ile Leu Glu Cys Lys
 210 215 220

<210> 75
 <211> 1780
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (195)...(1709)

<400> 75
 ttgttttttaa tcttttcttat tttcattaat tgttacgaat agaaatactt aaggggggttt 60
 ttcattctta aaaaaaggat tttttaagga aattgaatct tgtagtctt tgtataacaa 120
 attatgtgat aatcaccaca agtaatcggc ttagtgtcat attacgaaga ttttaagatca 180
 taaaaggaaa aaag atg gtt aat aaa gat gtg aaa caa acc act gct ttt 230
 Met Val Asn Lys Asp Val Lys Gln Thr Thr Ala Phe
 1 5 10
 ggc gct ccc gtt tgg gat gac aac aat gtg att acg gcc ggc cct aga 278
 Gly Ala Pro Val Trp Asp Asp Asn Asn Val Ile Thr Ala Gly Pro Arg

15	20	25	
ggt cct gtt tta tta caa agc act tgg ttt ttg gaa aag tta gcg gcg			326
Gly Pro Val Leu Leu Gln Ser Thr Trp Phe Leu Glu Lys Leu Ala Ala			
30	35	40	
ttt gac aga gaa aga atc cct gaa agg gtg gtg cat gct aaa gga agc			374
Phe Asp Arg Glu Arg Ile Pro Glu Arg Val Val His Ala Lys Gly Ser			
45	50	55	60
gga gct tat ggc act ttc act gtg act aaa gac atc act aaa tac act			422
Gly Ala Tyr Gly Thr Phe Thr Val Thr Lys Asp Ile Thr Lys Tyr Thr			
65	70	75	
aaa gcg aaa att ttc tct aaa gtg ggc aaa aaa acc gaa tgc ttc ttc			470
Lys Ala Lys Ile Phe Ser Lys Val Gly Lys Lys Thr Glu Cys Phe Phe			
80	85	90	
aga ttt tct act gtg gct ggt gaa aga ggc agt gcg gat gcg gtg aga			518
Arg Phe Ser Thr Val Ala Gly Glu Arg Gly Ser Ala Asp Ala Val Arg			
95	100	105	
gac cct aga ggt ttt gcg atg aag tat tac act gaa gaa ggt aac tgg			566
Asp Pro Arg Gly Phe Ala Met Lys Tyr Tyr Thr Glu Glu Gly Asn Trp			
110	115	120	
gat tta gtg ggg aac aac acg cct gtt ttc ttt atc cgt gat gcg atc			614
Asp Leu Val Gly Asn Asn Thr Pro Val Phe Phe Ile Arg Asp Ala Ile			
125	130	135	140
aaa ttc cct gat ttc atc cac act caa aaa cga gat cct caa acc aat			662
Lys Phe Pro Asp Phe Ile His Thr Gln Lys Arg Asp Pro Gln Thr Asn			
145	150	155	
ttg cct aac cat gac atg gta tgg gat ttt tgg agt aat gtt cct gaa			710
Leu Pro Asn His Asp Met Val Trp Asp Phe Trp Ser Asn Val Pro Glu			
160	165	170	
agc tta tac caa gta aca tgg gtt atg agc gat agg ggt att cct aaa			758
Ser Leu Tyr Gln Val Thr Trp Val Met Ser Asp Arg Gly Ile Pro Lys			
175	180	185	
tct ttc cgc cac atg gat ggt ttt ggc agc cac act ttc agt ctt atc			806
Ser Phe Arg His Met Asp Gly Phe Gly Ser His Thr Phe Ser Leu Ile			
190	195	200	
aac gcg aaa ggc gaa cgc ttt tgg gtg aaa ttc cac ttt cac acc atg			854
Asn Ala Lys Gly Glu Arg Phe Trp Val Lys Phe His Phe His Thr Met			
205	210	215	220
caa ggc gtt aag cat ttg act aac gaa gaa gcc gca gaa gtt agg aag			902
Gln Gly Val Lys His Leu Thr Asn Glu Glu Ala Ala Glu Val Arg Lys			
225	230	235	
tat gat ccg gat tcc aat caa agg gat tta ttc aat gcg atc gct aga			950

Tyr Asp Pro Asp Ser Asn Gln Arg Asp Leu Phe Asn Ala Ile Ala Arg	
240 245 250	
ggg gat ttc cca aaa tgg aaa tta agc att caa gtg atg cca gaa gaa	998
Gly Asp Phe Pro Lys Trp Lys Leu Ser Ile Gln Val Met Pro Glu Glu	
255 260 265	
gat gct aag aag tat cga ttc cat ccg ttt gat gta act aaa att tgg	1046
Asp Ala Lys Lys Tyr Arg Phe His Pro Phe Asp Val Thr Lys Ile Trp	
270 275 280	
tat ctc caa gat tat cca ttg atg gaa gtg ggc att gtg gag ttg aat	1094
Tyr Leu Gln Asp Tyr Pro Leu Met Glu Val Gly Ile Val Glu Leu Asn	
285 290 295 300	
aaa aat cct gaa aac tat ttc gca gaa gtg gaa caa gcg gca ttc agt	1142
Lys Asn Pro Glu Asn Tyr Phe Ala Glu Val Glu Gln Ala Ala Phe Ser	
305 310 315	
ccg gct aat gtc gtt cct gga att ggc tat agc cct gat agg atg tta	1190
Pro Ala Asn Val Val Pro Gly Ile Gly Tyr Ser Pro Asp Arg Met Leu	
320 325 330	
caa ggg cgc ttg ttc tct tat gga gac aca cac cgc tac cgc tta ggc	1238
Gln Gly Arg Leu Phe Ser Tyr Gly Asp Thr His Arg Tyr Arg Leu Gly	
335 340 345	
gtt aat tat cct caa ata ccg gtt aat aaa cca aga tgc cca ttc cac	1286
Val Asn Tyr Pro Gln Ile Pro Val Asn Lys Pro Arg Cys Pro Phe His	
350 355 360	
tct tct agc aga gat ggt tac atg caa aac gga tac tac ggc tct tta	1334
Ser Ser Ser Arg Asp Gly Tyr Met Gln Asn Gly Tyr Tyr Gly Ser Leu	
365 370 375 380	
caa aac tat acg cct agc tca ttg cct ggc tat aaa gaa gat aag agc	1382
Gln Asn Tyr Thr Pro Ser Ser Leu Pro Gly Tyr Lys Glu Asp Lys Ser	
385 390 395	
gcg aga gat cct aag ttc aac tta gct cat att gag aaa gag ttt gaa	1430
Ala Arg Asp Pro Lys Phe Asn Leu Ala His Ile Glu Lys Glu Phe Glu	
400 405 410	
gtg tgg aat tgg gat tac aga gct gat gat agc gat tac tac acc caa	1478
Val Trp Asn Trp Asp Tyr Arg Ala Asp Asp Ser Asp Tyr Tyr Thr Gln	
415 420 425	
cca ggt gat tac tac cgc tca ttg cca gct gat gaa aaa gaa agg ttg	1526
Pro Gly Asp Tyr Tyr Arg Ser Leu Pro Ala Asp Glu Lys Glu Arg Leu	
430 435 440	
cat gac act att gga gag tct tta gct cat gtt acc cat aag gaa att	1574
His Asp Thr Ile Gly Glu Ser Leu Ala His Val Thr His Lys Glu Ile	
445 450 455 460	


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gtg gat aaa caa ttg gag cat ttc aag aaa gct gac ccc aaa tac gct 1622
Val Asp Lys Gln Leu Glu His Phe Lys Lys Ala Asp Pro Lys Tyr Ala
      465                      470                      475

gag gga gtt aaa aaa gct ctt gaa aaa cac caa aaa atg atg aaa gac 1670
Glu Gly Val Lys Lys Ala Leu Glu Lys His Gln Lys Met Met Lys Asp
      480                      485                      490

atg cat gga aaa gac atg cac cac aca aaa aag aaa aag taaccctttt 1719
Met His Gly Lys Asp Met His His Thr Lys Lys Lys Lys
      495                      500                      505

ctttaagcgt tcttattttt taggaacgct ttgtctttca aaatttaggt ttttggatac 1779
t                                                    1780

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<210> 76
<211> 505
<212> PRT
<213> Helicobacter pylori

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Trp Asp Asp Asn Asn Val Ile Thr Ala Gly Pro Arg Gly Pro Val Leu
      20      25      30
Leu Gln Ser Thr Trp Phe Leu Glu Lys Leu Ala Ala Phe Asp Arg Glu
      35      40      45
Arg Ile Pro Glu Arg Val Val His Ala Lys Gly Ser Gly Ala Tyr Gly
      50      55      60
Thr Phe Thr Val Thr Lys Asp Ile Thr Lys Tyr Thr Lys Ala Lys Ile
      65      70      75      80
Phe Ser Lys Val Gly Lys Lys Thr Glu Cys Phe Phe Arg Phe Ser Thr
      85      90      95
Val Ala Gly Glu Arg Gly Ser Ala Asp Ala Val Arg Asp Pro Arg Gly
      100     105     110
Phe Ala Met Lys Tyr Tyr Thr Glu Glu Gly Asn Trp Asp Leu Val Gly
      115     120     125
Asn Asn Thr Pro Val Phe Phe Ile Arg Asp Ala Ile Lys Phe Pro Asp
      130     135     140
Phe Ile His Thr Gln Lys Arg Asp Pro Gln Thr Asn Leu Pro Asn His
      145     150     155     160
Asp Met Val Trp Asp Phe Trp Ser Asn Val Pro Glu Ser Leu Tyr Gln
      165     170     175
Val Thr Trp Val Met Ser Asp Arg Gly Ile Pro Lys Ser Phe Arg His
      180     185     190
Met Asp Gly Phe Gly Ser His Thr Phe Ser Leu Ile Asn Ala Lys Gly
      195     200     205
Glu Arg Phe Trp Val Lys Phe His Phe His Thr Met Gln Gly Val Lys
      210     215     220
His Leu Thr Asn Glu Glu Ala Ala Glu Val Arg Lys Tyr Asp Pro Asp
      225     230     235     240
Ser Asn Gln Arg Asp Leu Phe Asn Ala Ile Ala Arg Gly Asp Phe Pro
      245     250     255
Lys Trp Lys Leu Ser Ile Gln Val Met Pro Glu Glu Asp Ala Lys Lys
      260     265     270

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Leu	Arg	Asn	Tyr	Leu	Leu	Gly	Val	His	Tyr	Arg	Ser	Val	Leu	Asn	Phe	
35					40					45					50	
aat	gaa	gaa	gac	ttg	tta	gtg	agt	aaa	aaa	cgc	ttg	gat	aaa	atc	tat	248
Asn	Glu	Glu	Asp	Leu	Leu	Val	Ser	Lys	Lys	Arg	Leu	Asp	Lys	Ile	Tyr	
				55					60					65		
cgt	tta	aaa	cag	cgc	gtt	tta	ggg	act	ctt	gga	gga	ata	aat	cca	aac	296
Arg	Leu	Lys	Gln	Arg	Val	Leu	Gly	Thr	Leu	Gly	Gly	Ile	Asn	Pro	Asn	
			70					75					80			
ttt	aaa	aaa	gaa	att	tta	gag	tgc	atg	caa	gat	gat	tta	aac	ggt	tct	344
Phe	Lys	Lys	Glu	Ile	Leu	Glu	Cys	Met	Gln	Asp	Asp	Leu	Asn	Val	Ser	
		85					90					95				
aaa	gcg	ttg	agc	gtt	tta	gaa	agc	atg	ctt	tct	tcc	act	aat	gaa	aaa	392
Lys	Ala	Leu	Ser	Val	Leu	Glu	Ser	Met	Leu	Ser	Ser	Thr	Asn	Glu	Lys	
	100					105					110					
ttg	gat	caa	aac	cct	aaa	aac	aag	gct	tta	aag	ggc	gaa	att	tta	gcg	440
Leu	Asp	Gln	Asn	Pro	Lys	Asn	Lys	Ala	Leu	Lys	Gly	Glu	Ile	Leu	Ala	
115					120					125					130	
aat	ttg	aaa	ttc	ata	gaa	gaa	ctg	ctt	ggc	atc	ggg	ttt	aaa	gac	cct	488
Asn	Leu	Lys	Phe	Ile	Glu	Glu	Leu	Leu	Gly	Ile	Gly	Phe	Lys	Asp	Pro	
				135					140					145		
agc	gcc	tat	ttc	caa	tta	ggc	gtg	agt	gaa	agc	gaa	aaa	caa	gaa	att	536
Ser	Ala	Tyr	Phe	Gln	Leu	Gly	Val	Ser	Glu	Ser	Glu	Lys	Gln	Glu	Ile	
			150					155					160			
gaa	aac	aag	ata	gaa	gaa	aga	aaa	cgc	gcc	aaa	gag	cga	aaa	gat	ttt	584
Glu	Asn	Lys	Ile	Glu	Glu	Arg	Lys	Arg	Ala	Lys	Glu	Arg	Lys	Asp	Phe	
		165					170					175				
tta	aaa	gcc	gat	agc	atc	aga	gaa	gag	ctt	ttg	aaa	caa	aaa	atc	gct	632
Leu	Lys	Ala	Asp	Ser	Ile	Arg	Glu	Glu	Leu	Leu	Lys	Gln	Lys	Ile	Ala	
	180					185					190					
ttg	atg	gac	acc	cca	caa	ggc	acg	atc	tgg	gag	aag	ttt	ttt			674
Leu	Met	Asp	Thr	Pro	Gln	Gly	Thr	Ile	Trp	Glu	Lys	Phe	Phe			
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<210> 78

<211> 208

<212> PRT

<213> Helicobacter pylori

<400> 78

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Leu	Gly	Asn	Ser	Phe	Phe	Val	Lys	Asp	Ala	Leu	Lys	Asn	Tyr	Asp	Gly
			20					25					30		

Glu	Ile	Leu	Arg	Asn	Tyr	Leu	Leu	Gly	Val	His	Tyr	Arg	Ser	Val	Leu
	35					40					45				
Asn	Phe	Asn	Glu	Glu	Asp	Leu	Leu	Val	Ser	Lys	Lys	Arg	Leu	Asp	Lys
	50					55					60				
Ile	Tyr	Arg	Leu	Lys	Gln	Arg	Val	Leu	Gly	Thr	Leu	Gly	Gly	Ile	Asn
65					70					75					80
Pro	Asn	Phe	Lys	Lys	Glu	Ile	Leu	Glu	Cys	Met	Gln	Asp	Asp	Leu	Asn
			85						90					95	
Val	Ser	Lys	Ala	Leu	Ser	Val	Leu	Glu	Ser	Met	Leu	Ser	Ser	Thr	Asn
			100					105						110	
Glu	Lys	Leu	Asp	Gln	Asn	Pro	Lys	Asn	Lys	Ala	Leu	Lys	Gly	Glu	Ile
		115					120					125			
Leu	Ala	Asn	Leu	Lys	Phe	Ile	Glu	Glu	Leu	Leu	Gly	Ile	Gly	Phe	Lys
	130					135					140				
Asp	Pro	Ser	Ala	Tyr	Phe	Gln	Leu	Gly	Val	Ser	Glu	Ser	Glu	Lys	Gln
145					150					155					160
Glu	Ile	Glu	Asn	Lys	Ile	Glu	Glu	Arg	Lys	Arg	Ala	Lys	Glu	Arg	Lys
			165						170					175	
Asp	Phe	Leu	Lys	Ala	Asp	Ser	Ile	Arg	Glu	Glu	Leu	Leu	Lys	Gln	Lys
			180						185				190		
Ile	Ala	Leu	Met	Asp	Thr	Pro	Gln	Gly	Thr	Ile	Trp	Glu	Lys	Phe	Phe
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 <211> 410
 <212> DNA
 <213> Helicobacter pylori

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 <222> (60)...(329)

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 atg ctg acg att gaa acc agt aaa aaa ttt gat aag gat ctt aaa att 107
 Met Leu Thr Ile Glu Thr Ser Lys Lys Phe Asp Lys Asp Leu Lys Ile
 1 5 10 15

 ctt gtt aaa aac ggg ttt gat tta aag ctt ttg tat aaa gtg gtt gga 155
 Leu Val Lys Asn Gly Phe Asp Leu Lys Leu Leu Tyr Lys Val Val Gly
 20 25 30

 aat tta gcc aca gag caa ccc cta gct ccc aaa tac aaa gac cac cca 203
 Asn Leu Ala Thr Glu Gln Pro Leu Ala Pro Lys Tyr Lys Asp His Pro
 35 40 45

 ctc aaa ggc ggt tta aaa gat ttt agg gaa tgc cac tta aaa ccg gat 251
 Leu Lys Gly Gly Leu Lys Asp Phe Arg Glu Cys His Leu Lys Pro Asp
 50 55 60

 tta ttg ctt gtc tat caa att aaa aaa caa gaa aac acc ctc ttt tta 299
 Leu Leu Leu Val Tyr Gln Ile Lys Lys Gln Glu Asn Thr Leu Phe Leu
 65 70 75 80

gta agg tta ggc agt cat agc gag ctg ttt tgaaccgccc acaccctta 349
 Val Arg Leu Gly Ser His Ser Glu Leu Phe
 85 90

taacgcttaa accaactacc cccctttttt agggataaat ttaggggttga aacaccgctt 409
 a 410

<210> 80
 <211> 90
 <212> PRT
 <213> Helicobacter pylori

<400> 80
 Met Leu Thr Ile Glu Thr Ser Lys Lys Phe Asp Lys Asp Leu Lys Ile
 1 5 10 15
 Leu Val Lys Asn Gly Phe Asp Leu Lys Leu Leu Tyr Lys Val Val Gly
 20 25 30
 Asn Leu Ala Thr Glu Gln Pro Leu Ala Pro Lys Tyr Lys Asp His Pro
 35 40 45
 Leu Lys Gly Gly Leu Lys Asp Phe Arg Glu Cys His Leu Lys Pro Asp
 50 55 60
 Leu Leu Leu Val Tyr Gln Ile Lys Lys Gln Glu Asn Thr Leu Phe Leu
 65 70 75 80
 Val Arg Leu Gly Ser His Ser Glu Leu Phe
 85 90

<210> 81
 <211> 425
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (78)...(341)

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 aagaaaaagg gcttttag gtg ttg aag ctc aat ctt aaa aaa tct ttt caa 110
 Val Leu Lys Leu Asn Leu Lys Lys Ser Phe Gln
 1 5 10
 aaa gat ttt gat aaa ttg ctt ttg aat ggg ttt gat gat agc gtt ttg 158
 Lys Asp Phe Asp Lys Leu Leu Leu Asn Gly Phe Asp Asp Ser Val Leu
 15 20 25
 aat gaa gtc att cta acc tta aga aaa aaa gaa ccg cta gat cca caa 206
 Asn Glu Val Ile Leu Thr Leu Arg Lys Lys Glu Pro Leu Asp Pro Gln
 30 35 40
 ttt caa gat cat gcc tta aag gga aag tgg aaa cct ttt agg gaa tgc 254
 Phe Gln Asp His Ala Leu Lys Gly Lys Trp Lys Pro Phe Arg Glu Cys
 45 50 55
 cac att aag cct gat gtt ttg ctt gtg tat tta gtg aaa gat gat gaa 302

His Ile Lys Pro Asp Val Leu Leu Val Tyr Leu Val Lys Asp Asp Glu
 60 65 70 75
 ctg att ttg tta agg tta ggc agt cat agc gag ctg ttt taatccaccc 351
 Leu Ile Leu Leu Arg Leu Gly Ser His Ser Glu Leu Phe
 80 85
 acacccttta taacgcttaa accaaatcgc ttgcgctata atgaactgat attatatattt 411
 aaaaggaata aaca 425
 <210> 82
 <211> 88
 <212> PRT
 <213> *Helicobacter pylori*
 <400> 82
 Val Leu Lys Leu Asn Leu Lys Lys Ser Phe Gln Lys Asp Phe Asp Lys
 1 5 10 15
 Leu Leu Leu Asn Gly Phe Asp Asp Ser Val Leu Asn Glu Val Ile Leu
 20 25 30
 Thr Leu Arg Lys Lys Glu Pro Leu Asp Pro Gln Phe Gln Asp His Ala
 35 40 45
 Leu Lys Gly Lys Trp Lys Pro Phe Arg Glu Cys His Ile Lys Pro Asp
 50 55 60
 Val Leu Leu Val Tyr Leu Val Lys Asp Asp Glu Leu Ile Leu Leu Arg
 65 70 75 80
 Leu Gly Ser His Ser Glu Leu Phe
 85
 <210> 83
 <211> 844
 <212> DNA
 <213> *Helicobacter pylori*
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 <222> (111) ... (779)
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 attaaatttc gctacaatta aataaaaacg ataatttttag agagattggc atg caa 116
 Met Gln
 1
 ggt tta tgg att tat cca gag gat aca gaa gtt tta ggg gtt gct tgt 164
 Gly Leu Trp Ile Tyr Pro Glu Asp Thr Glu Val Leu Gly Val Ala Cys
 5 10 15
 aag agc ctt tta aaa gca cta acg cca cgc tat caa aaa gtc gcc ttg 212
 Lys Ser Leu Leu Lys Ala Leu Thr Pro Arg Tyr Gln Lys Val Ala Leu
 20 25 30
 ttt tcg ccc att agt gga ggg tgt gag agc ttg gag gag tgc gag agc 260
 Phe Ser Pro Ile Ser Gly Gly Cys Glu Ser Leu Glu Glu Cys Glu Ser

35	40	45	50	
ttg aac cct tta gaa ttt cat agt gcg ata agc aaa caa aag gct tta				308
Leu Asn Pro Leu Glu Phe His Ser Ala Ile Ser Lys Gln Lys Ala Leu				
	55	60	65	
gag ctt gcg agc acc gct caa gaa gag tta cta ttt gaa acg att ctc				356
Glu Leu Ala Ser Thr Ala Gln Glu Glu Leu Leu Phe Glu Thr Ile Leu				
	70	75	80	
aaa cgc tat gat gaa tta caa tcc acg cat gat ttt gtc att aat ttg				404
Lys Arg Tyr Asp Glu Leu Gln Ser Thr His Asp Phe Val Ile Asn Leu				
	85	90	95	
ggg tgt gcg ccg aag ttt ttc tta aac gct cct tta gat tta aac acc				452
Gly Cys Ala Pro Lys Phe Phe Leu Asn Ala Pro Leu Asp Leu Asn Thr				
	100	105	110	
att tta gcc aag cat tta aac gct tct gtt gtg gct gtc gcg caa acg				500
Ile Leu Ala Lys His Leu Asn Ala Ser Val Val Ala Val Ala Gln Thr				
	115	120	125	130
agt ttg gaa tat ttg aaa gcc atg cac tct cat att ctc aaa aaa gaa				548
Ser Leu Glu Tyr Leu Lys Ala Met His Ser His Ile Leu Lys Lys Glu				
	135	140	145	
gcc cct ttc gct gta ggg tta ttt gcg ggc gaa acg ctt gaa aaa cca				596
Ala Pro Phe Ala Val Gly Leu Phe Ala Gly Glu Thr Leu Glu Lys Pro				
	150	155	160	
cat ttt tta agc atg tct ctt tgc aag caa caa tgc gaa tta gaa gcg				644
His Phe Leu Ser Met Ser Leu Cys Lys Gln Gln Cys Glu Leu Glu Ala				
	165	170	175	
gat ctg att gaa agc gtg ttg caa ata aaa agc gag att att acc cct				692
Asp Leu Ile Glu Ser Val Leu Gln Ile Lys Ser Glu Ile Ile Thr Pro				
	180	185	190	
tta gcc ttt caa agg ggt ttg gaa aaa aag gct aaa aaa cag att aaa				740
Leu Ala Phe Gln Arg Gly Leu Glu Lys Lys Ala Lys Lys Gln Ile Lys				
	195	200	205	210
aaa gtg gtt tta cca gag agc gaa aag atg aaa gga ttt tgaaagctgc				789
Lys Val Val Leu Pro Glu Ser Glu Lys Met Lys Gly Phe				
	215	220		
acatcgtttg aatttaatgg gcgcggtagg attgatctta ttaggcgata aagaa				844
<210> 84				
<211> 223				
<212> PRT				
<213> Helicobacter pylori				
<400> 84				
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Ala Cys Lys Ser Leu Leu Lys Ala Leu Thr Pro Arg Tyr Gln Lys Val			
20	25	30	
Ala Leu Phe Ser Pro Ile Ser Gly Gly Cys Glu Ser Leu Glu Glu Cys			
35	40	45	
Glu Ser Leu Asn Pro Leu Glu Phe His Ser Ala Ile Ser Lys Gln Lys			
50	55	60	
Ala Leu Glu Leu Ala Ser Thr Ala Gln Glu Glu Leu Leu Phe Glu Thr			
65	70	75	80
Ile Leu Lys Arg Tyr Asp Glu Leu Gln Ser Thr His Asp Phe Val Ile			
85	90	95	
Asn Leu Gly Cys Ala Pro Lys Phe Phe Leu Asn Ala Pro Leu Asp Leu			
100	105	110	
Asn Thr Ile Leu Ala Lys His Leu Asn Ala Ser Val Val Ala Val Ala			
115	120	125	
Gln Thr Ser Leu Glu Tyr Leu Lys Ala Met His Ser His Ile Leu Lys			
130	135	140	
Lys Glu Ala Pro Phe Ala Val Gly Leu Phe Ala Gly Glu Thr Leu Glu			
145	150	155	160
Lys Pro His Phe Leu Ser Met Ser Leu Cys Lys Gln Gln Cys Glu Leu			
165	170	175	
Glu Ala Asp Leu Ile Glu Ser Val Leu Gln Ile Lys Ser Glu Ile Ile			
180	185	190	
Thr Pro Leu Ala Phe Gln Arg Gly Leu Glu Lys Lys Ala Lys Lys Gln			
195	200	205	
Ile Lys Lys Val Val Leu Pro Glu Ser Glu Lys Met Lys Gly Phe			
210	215	220	

<210> 85
 <211> 821
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (79)...(753)

<221> misc_feature
 <222> 43
 <223> n = A,T,C or G

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 agccagaaat tgggcaaa atg tgg aat ttt aac acc gaa tac agc agt cag 111
 Met Trp Asn Phe Asn Thr Glu Tyr Ser Ser Gln
 1 5 10

tat ttt gat ttt aga gcc gcc ggt ttt gtc caa ttg att tct aat tac 159
 Tyr Phe Asp Phe Arg Ala Ala Gly Phe Val Gln Leu Ile Ser Asn Tyr
 15 20 25

atc aat caa ttt tct tca acg ctt ttt gta acc aac ttg ccc gca caa 207
 Ile Asn Gln Phe Ser Ser Thr Leu Phe Val Thr Asn Leu Pro Ala Gln
 30 35 40

gat att att tat gtg cct ggt tat gaa gtt tca ggg acg gct aaa tac	255
Asp Ile Ile Tyr Val Pro Gly Tyr Glu Val Ser Gly Thr Ala Lys Tyr	
45 50 55	
aag ggc ttt tct tta ggc ttg agc gtg gcg cga tca tgg cct tct tta	303
Lys Gly Phe Ser Leu Gly Leu Ser Val Ala Arg Ser Trp Pro Ser Leu	
60 65 70 75	
aag ggg cgt ttg atc gct gat gtg tat gaa ttg gcg gcc acg aca ggc	351
Lys Gly Arg Leu Ile Ala Asp Val Tyr Glu Leu Ala Ala Thr Thr Gly	
80 85 90	
aat gtg ttt att ttg acg gca agt tat aaa atc cca cgc act ggt ctt	399
Asn Val Phe Ile Leu Thr Ala Ser Tyr Lys Ile Pro Arg Thr Gly Leu	
95 100 105	
agc atc act tgg ctt tca cgc ttc gtt acg gat ttg agt tat tgc tct	447
Ser Ile Thr Trp Leu Ser Arg Phe Val Thr Asp Leu Ser Tyr Cys Ser	
110 115 120	
tat agc cct tat cgt aac ggc cct acg gat att gac aga cgg cct agt	495
Tyr Ser Pro Tyr Arg Asn Gly Pro Thr Asp Ile Asp Arg Arg Pro Ser	
125 130 135	
aat tgc cct aaa acg ccc ggg att ttt cat gtt cat aaa ccc ggt tat	543
Asn Cys Pro Lys Thr Pro Gly Ile Phe His Val His Lys Pro Gly Tyr	
140 145 150 155	
ggg gtg agc agt ttt ttt gta acc tac aaa ccc acc tat aag aag ctt	591
Gly Val Ser Ser Phe Phe Val Thr Tyr Lys Pro Thr Tyr Lys Lys Leu	
160 165 170	
aaa ggg ttg agc ttg aat gcg gtg ttt aac aat gtt ttt aac caa caa	639
Lys Gly Leu Ser Leu Asn Ala Val Phe Asn Asn Val Phe Asn Gln Gln	
175 180 185	
tat att gat caa gca agc ccg gtg atg agc cct gat gaa ccc aat caa	687
Tyr Ile Asp Gln Ala Ser Pro Val Met Ser Pro Asp Glu Pro Asn Gln	
190 195 200	
gac aaa tac gca aga ggc atg gca gag cct ggc ttt aac gct aga ttt	735
Asp Lys Tyr Ala Arg Gly Met Ala Glu Pro Gly Phe Asn Ala Arg Phe	
205 210 215	
gaa att tcc tat aag ttt taataatgga tctaaaaata aggatttcac	783
Glu Ile Ser Tyr Lys Phe	
220 225	
gggtagcgga tctaatacaaa aataaaacat tctttaga	821
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<400> 86
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20 25 30
Ser Thr Leu Phe Val Thr Asn Leu Pro Ala Gln Asp Ile Ile Tyr Val
35 40 45
Pro Gly Tyr Glu Val Ser Gly Thr Ala Lys Tyr Lys Gly Phe Ser Leu
50 55 60
Gly Leu Ser Val Ala Arg Ser Trp Pro Ser Leu Lys Gly Arg Leu Ile
65 70 75 80
Ala Asp Val Tyr Glu Leu Ala Ala Thr Thr Gly Asn Val Phe Ile Leu
85 90 95
Thr Ala Ser Tyr Lys Ile Pro Arg Thr Gly Leu Ser Ile Thr Trp Leu
100 105 110
Ser Arg Phe Val Thr Asp Leu Ser Tyr Cys Ser Tyr Ser Pro Tyr Arg
115 120 125
Asn Gly Pro Thr Asp Ile Asp Arg Arg Pro Ser Asn Cys Pro Lys Thr
130 135 140
Pro Gly Ile Phe His Val His Lys Pro Gly Tyr Gly Val Ser Ser Phe
145 150 155 160
Phe Val Thr Tyr Lys Pro Thr Tyr Lys Lys Leu Lys Gly Leu Ser Leu
165 170 175
Asn Ala Val Phe Asn Asn Val Phe Asn Gln Gln Tyr Ile Asp Gln Ala
180 185 190
Ser Pro Val Met Ser Pro Asp Glu Pro Asn Gln Asp Lys Tyr Ala Arg
195 200 205
Gly Met Ala Glu Pro Gly Phe Asn Ala Arg Phe Glu Ile Ser Tyr Lys
210 215 220
Phe
225

<210> 87
<211> 1350
<212> DNA
<213> Helicobacter pylori

<220>
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<222> (60)...(1202)

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atg aat tta aat ttt atg ccc cta ttg cat gct tat aac cat gcg agc 107
Met Asn Leu Asn Phe Met Pro Leu Leu His Ala Tyr Asn His Ala Ser
1 5 10 15
att gat ttt cat ttc aat tct agt gct agg gat ttt tgc gtg cat gaa 155
Ile Asp Phe His Phe Asn Ser Ser Ala Arg Asp Phe Cys Val His Glu
20 25 30
gtg cct ttg tat gaa ttt agt aac acg ggc gaa cat gcc gtt att caa 203
Val Pro Leu Tyr Glu Phe Ser Asn Thr Gly Glu His Ala Val Ile Gln
35 40 45

gtg agg aaa agc ggt tta agc act tta gaa atg ctt cag att ttt tct	251
Val Arg Lys Ser Gly Leu Ser Thr Leu Glu Met Leu Gln Ile Phe Ser	
50 55 60	
caa att tta ggg gta aga atc gct gaa ttg ggt tat gcg ggc ttg aaa	299
Gln Ile Leu Gly Val Arg Ile Ala Glu Leu Gly Tyr Ala Gly Leu Lys	
65 70 75 80	
gat aaa aac gcg ctg acg act caa ttc atc tca ctc cct aaa aaa tac	347
Asp Lys Asn Ala Leu Thr Thr Gln Phe Ile Ser Leu Pro Lys Lys Tyr	
85 90 95	
gcc cct tta tta gaa aaa aat acg agc aac ttt caa gaa aaa aac ctt	395
Ala Pro Leu Leu Glu Lys Asn Thr Ser Asn Phe Gln Glu Lys Asn Leu	
100 105 110	
aaa atc ctg tct ttg aat tac cac cac aat aaa atc aaa ttg ggg cat	443
Lys Ile Leu Ser Leu Asn Tyr His His Asn Lys Ile Lys Leu Gly His	
115 120 125	
ttg aaa ggg aat cgc ttt ttt atg cgt ttt aaa aaa atg acc cct cta	491
Leu Lys Gly Asn Arg Phe Phe Met Arg Phe Lys Lys Met Thr Pro Leu	
130 135 140	
aac gct caa aaa aca aag cag gtt tta gaa caa atc gcg cag ttt gga	539
Asn Ala Gln Lys Thr Lys Gln Val Leu Glu Gln Ile Ala Gln Phe Gly	
145 150 155 160	
atg cct aat tat ttt ggc tcg caa cgc ttt ggg aag ttc aat gac aac	587
Met Pro Asn Tyr Phe Gly Ser Gln Arg Phe Gly Lys Phe Asn Asp Asn	
165 170 175	
cac caa gag ggt tta aaa atc tta caa aat caa acg aaa ttc gcc cat	635
His Gln Glu Gly Leu Lys Ile Leu Gln Asn Gln Thr Lys Phe Ala His	
180 185 190	
caa aaa tta aac gct ttt tta att tca agc tat caa agt tat ttg ttt	683
Gln Lys Leu Asn Ala Phe Leu Ile Ser Ser Tyr Gln Ser Tyr Leu Phe	
195 200 205	
aac gcg ctt tta agc aaa cga tta gaa atc agt aaa atc att agc gct	731
Asn Ala Leu Leu Ser Lys Arg Leu Glu Ile Ser Lys Ile Ile Ser Ala	
210 215 220	
ttt agt gtc aaa gaa aat tta gaa ttt ttt aaa caa aaa aat tta agc	779
Phe Ser Val Lys Glu Asn Leu Glu Phe Phe Lys Gln Lys Asn Leu Ser	
225 230 235 240	
gtt gat tca gac act cta aaa acc ctt aaa aac caa gcc cac ccc ttt	827
Val Asp Ser Asp Thr Leu Lys Thr Leu Lys Asn Gln Ala His Pro Phe	
245 250 255	
aaa atc tta gaa ggc gat gtg atg tgc cat tac cct tat ggg aag ttt	875
Lys Ile Leu Glu Gly Asp Val Met Cys His Tyr Pro Tyr Gly Lys Phe	

260	265	270	
ttt gac gct tta gaa tta gaa aaa gag ggc gaa agg ttt ttg aaa aaa			923
Phe Asp Ala Leu Glu Leu Glu Lys Glu Gly Glu Arg Phe Leu Lys Lys			
275	280	285	
gaa gtt gcg cct acg ggg tta cta gac ggc aaa aaa gct ctt tat gca			971
Glu Val Ala Pro Thr Gly Leu Leu Asp Gly Lys Lys Ala Leu Tyr Ala			
290	295	300	
aaa aat ttg agt tta gaa att gaa aaa gaa ttc cag cat aac ctt tta			1019
Lys Asn Leu Ser Leu Glu Ile Glu Lys Glu Phe Gln His Asn Leu Leu			
305	310	315	320
agt agc cat gct aaa acg cta ggc tct agg cgg ttt ttt tgg gtg ttt			1067
Ser Ser His Ala Lys Thr Leu Gly Ser Arg Arg Phe Phe Trp Val Phe			
325	330	335	
gta gaa aat gta act tct caa tac gtg aaa gaa aaa gcg caa ttt gaa			1115
Val Glu Asn Val Thr Ser Gln Tyr Val Lys Glu Lys Ala Gln Phe Glu			
340	345	350	
ttg gga ttt tac ttg cct aaa ggg agt tat gcg agc gcg ttg ctc aaa			1163
Leu Gly Phe Tyr Leu Pro Lys Gly Ser Tyr Ala Ser Ala Leu Leu Lys			
355	360	365	
gaa atc aag cat gag aaa gga gaa aat aat gac gaa ttt tgaaaagatt			1212
Glu Ile Lys His Glu Lys Gly Glu Asn Asn Asp Glu Phe			
370	375	380	
atcgcgcaaa acaggatcaa aacgaacgcg gttttagcga cttattgcgt gatttttgcgt 1272			
tttatcgggt tggttggtgga tgtcattaga attaatgcta atgatttagg aatagctctt 1332			
tttaaaactca tgactttt 1350			
<210> 88			
<211> 381			
<212> PRT			
<213> Helicobacter pylori			
<400> 88			
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1 5 10 15			
Ile Asp Phe His Phe Asn Ser Ser Ala Arg Asp Phe Cys Val His Glu			
20 25 30			
Val Pro Leu Tyr Glu Phe Ser Asn Thr Gly Glu His Ala Val Ile Gln			
35 40 45			
Val Arg Lys Ser Gly Leu Ser Thr Leu Glu Met Leu Gln Ile Phe Ser			
50 55 60			
Gln Ile Leu Gly Val Arg Ile Ala Glu Leu Gly Tyr Ala Gly Leu Lys			
65 70 75 80			
Asp Lys Asn Ala Leu Thr Thr Gln Phe Ile Ser Leu Pro Lys Lys Tyr			
85 90 95			
Ala Pro Leu Leu Glu Lys Asn Thr Ser Asn Phe Gln Glu Lys Asn Leu			
100 105 110			
Lys Ile Leu Ser Leu Asn Tyr His His Asn Lys Ile Lys Leu Gly His			

115	120	125
Leu Lys Gly Asn Arg Phe Phe Met Arg Phe Lys Lys Met Thr Pro Leu		
130	135	140
Asn Ala Gln Lys Thr Lys Gln Val Leu Glu Gln Ile Ala Gln Phe Gly		
145	150	155
Met Pro Asn Tyr Phe Gly Ser Gln Arg Phe Gly Lys Phe Asn Asp Asn		
165	170	175
His Gln Glu Gly Leu Lys Ile Leu Gln Asn Gln Thr Lys Phe Ala His		
180	185	190
Gln Lys Leu Asn Ala Phe Leu Ile Ser Ser Tyr Gln Ser Tyr Leu Phe		
195	200	205
Asn Ala Leu Leu Ser Lys Arg Leu Glu Ile Ser Lys Ile Ile Ser Ala		
210	215	220
Phe Ser Val Lys Glu Asn Leu Glu Phe Phe Lys Gln Lys Asn Leu Ser		
225	230	235
Val Asp Ser Asp Thr Leu Lys Thr Leu Lys Asn Gln Ala His Pro Phe		
245	250	255
Lys Ile Leu Glu Gly Asp Val Met Cys His Tyr Pro Tyr Gly Lys Phe		
260	265	270
Phe Asp Ala Leu Glu Leu Glu Lys Glu Gly Glu Arg Phe Leu Lys Lys		
275	280	285
Glu Val Ala Pro Thr Gly Leu Leu Asp Gly Lys Lys Ala Leu Tyr Ala		
290	295	300
Lys Asn Leu Ser Leu Glu Ile Glu Lys Glu Phe Gln His Asn Leu Leu		
305	310	315
Ser Ser His Ala Lys Thr Leu Gly Ser Arg Arg Phe Phe Trp Val Phe		
325	330	335
Val Glu Asn Val Thr Ser Gln Tyr Val Lys Glu Lys Ala Gln Phe Glu		
340	345	350
Leu Gly Phe Tyr Leu Pro Lys Gly Ser Tyr Ala Ser Ala Leu Leu Lys		
355	360	365
Glu Ile Lys His Glu Lys Gly Glu Asn Asn Asp Glu Phe		
370	375	380

<210> 89
 <211> 1080
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (76)...(828)

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 ccagatccct taaaa atg aaa ctc ccg gtc gtt gag agc ttt ttt tcc tta 111
 Met Lys Leu Pro Val Glu Ser Phe Phe Ser Leu
 1 5 10

 caa ggt gaa gga aaa agg ata ggc aag ccc agt ctt ttt ttg cgc tta 159
 Gln Gly Glu Gly Lys Arg Ile Gly Lys Pro Ser Leu Phe Leu Arg Leu
 15 20 25

 ggg ggg tgt aac ctt tca tgc aag ggc ttt aat tgt aaa acc tta ttg 207

Gly	Gly	Cys	Asn	Leu	Ser	Cys	Lys	Gly	Phe	Asn	Cys	Lys	Thr	Leu	Leu		
30						35					40						
aat	gat	gaa	atc	cta	aca	ggg	tgc	gac	agc	ttg	tat	gcg	gtg	cat	ccc	255	
Asn	Asp	Glu	Ile	Leu	Thr	Gly	Cys	Asp	Ser	Leu	Tyr	Ala	Val	His	Pro		
45					50				55						60		
aaa	ttc	aaa	aca	tct	tgg	gat	tat	tat	aat	gag	cct	aag	ccc	ttg	att	303	
Lys	Phe	Lys	Thr	Ser	Trp	Asp	Tyr	Tyr	Asn	Glu	Pro	Lys	Pro	Leu	Ile		
				65				70						75			
gaa	cga	tta	gag	gat	tta	gcc	cct	aat	tat	aag	gat	ttt	gat	ttc	att	351	
Glu	Arg	Leu	Glu	Asp	Leu	Ala	Pro	Asn	Tyr	Lys	Asp	Phe	Asp	Phe	Ile		
			80					85					90				
ctt	aca	ggc	ggg	gag	cca	agc	ttg	tat	ttc	aat	aac	cct	att	tta	atc	399	
Leu	Thr	Gly	Gly	Glu	Pro	Ser	Leu	Tyr	Phe	Asn	Asn	Pro	Ile	Leu	Ile		
		95					100					105					
agc	gtt	tta	gag	cat	ttt	tat	cgc	caa	aaa	atc	cct	tta	tgt	gta	gag	447	
Ser	Val	Leu	Glu	His	Phe	Tyr	Arg	Gln	Lys	Ile	Pro	Leu	Cys	Val	Glu		
	110					115					120						
agt	aat	ggg	tct	att	ttt	ttt	gaa	ttt	agc	cct	att	tta	aaa	gaa	ttg	495	
Ser	Asn	Gly	Ser	Ile	Phe	Phe	Glu	Phe	Ser	Pro	Ile	Leu	Lys	Glu	Leu		
125					130					135					140		
cat	ttc	act	cta	agc	gtc	aaa	ctc	tct	ttt	tct	tta	gag	gaa	gaa	agc	543	
His	Phe	Thr	Leu	Ser	Val	Lys	Leu	Ser	Phe	Ser	Leu	Glu	Glu	Glu	Ser		
				145					150					155			
aag	cgg	atc	cat	ctt	aaa	gcc	tta	caa	aat	atc	tta	aat	aac	gct	aaa	591	
Lys	Arg	Ile	His	Leu	Lys	Ala	Leu	Gln	Asn	Ile	Leu	Asn	Asn	Ala	Lys		
			160					165					170				
agc	gcg	cat	ttt	aaa	ttt	gtt	tta	gag	agc	caa	aac	gcc	gct	caa	tct	639	
Ser	Ala	His	Phe	Lys	Phe	Val	Leu	Glu	Ser	Gln	Asn	Ala	Ala	Gln	Ser		
		175					180					185					
att	ata	gaa	att	caa	agc	ctc	ttg	aaa	caa	ctc	tcc	tta	aaa	aat	aat	687	
Ile	Ile	Glu	Ile	Gln	Ser	Leu	Leu	Lys	Gln	Leu	Ser	Leu	Lys	Asn	Asn		
		190				195					200						
gaa	atc	ttt	tta	atg	cct	tta	ggc	aca	aat	aac	aac	gag	cta	gac	aaa	735	
Glu	Ile	Phe	Leu	Met	Pro	Leu	Gly	Thr	Asn	Asn	Asn	Glu	Leu	Asp	Lys		
205					210					215					220		
aat	cta	aaa	acc	cta	gcc	ccc	cta	gcc	ata	aag	cat	ggg	ttc	agg	cta	783	
Asn	Leu	Lys	Thr	Leu	Ala	Pro	Leu	Ala	Ile	Lys	His	Gly	Phe	Arg	Leu		
				225				230						235			
agc	gat	agg	ctt	cat	atc	cgc	ttg	tgg	gat	aat	caa	aaa	ggg	ttt		828	
Ser	Asp	Arg	Leu	His	Ile	Arg	Leu	Trp	Asp	Asn	Gln	Lys	Gly	Phe			
			240					245					250				

taaaaagtta atcatgacca tcaaagtttt ttgcgccaaa taccctactg aattagaaga 888
 attttatgct gagcgtatcg ctgacaaccc tttagggttt atccaacgct tggatctttt 948
 gcctagtatt agcgggttcg ttcaaaaatt gcgcgagcat ggcggggaat tttttgaaat 1008
 gagagagggg aacaagctca ttgggatttg tgggcttaat cctatcaatc aaacagaagc 1068
 cgagctgtgc aa 1080

<210> 90
 <211> 251
 <212> PRT
 <213> *Helicobacter pylori*

<400> 90
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 1 5 10 15
 Lys Arg Ile Gly Lys Pro Ser Leu Phe Leu Arg Leu Gly Gly Cys Asn
 20 25 30
 Leu Ser Cys Lys Gly Phe Asn Cys Lys Thr Leu Leu Asn Asp Glu Ile
 35 40 45
 Leu Thr Gly Cys Asp Ser Leu Tyr Ala Val His Pro Lys Phe Lys Thr
 50 55 60
 Ser Trp Asp Tyr Tyr Asn Glu Pro Lys Pro Leu Ile Glu Arg Leu Glu
 65 70 75 80
 Asp Leu Ala Pro Asn Tyr Lys Asp Phe Asp Phe Ile Leu Thr Gly Gly
 85 90 95
 Glu Pro Ser Leu Tyr Phe Asn Asn Pro Ile Leu Ile Ser Val Leu Glu
 100 105 110
 His Phe Tyr Arg Gln Lys Ile Pro Leu Cys Val Glu Ser Asn Gly Ser
 115 120 125
 Ile Phe Phe Glu Phe Ser Pro Ile Leu Lys Glu Leu His Phe Thr Leu
 130 135 140
 Ser Val Lys Leu Ser Phe Ser Leu Glu Glu Glu Ser Lys Arg Ile His
 145 150 155 160
 Leu Lys Ala Leu Gln Asn Ile Leu Asn Asn Ala Lys Ser Ala His Phe
 165 170 175
 Lys Phe Val Leu Glu Ser Gln Asn Ala Ala Gln Ser Ile Ile Glu Ile
 180 185 190
 Gln Ser Leu Leu Lys Gln Leu Ser Leu Lys Asn Asn Glu Ile Phe Leu
 195 200 205
 Met Pro Leu Gly Thr Asn Asn Asn Glu Leu Asp Lys Asn Leu Lys Thr
 210 215 220
 Leu Ala Pro Leu Ala Ile Lys His Gly Phe Arg Leu Ser Asp Arg Leu
 225 230 235 240
 His Ile Arg Leu Trp Asp Asn Gln Lys Gly Phe
 245 250

<210> 91
 <211> 1710
 <212> DNA
 <213> *Helicobacter pylori*

<220>
 <221> CDS
 <222> (120)...(1559)

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gattttattc ggtgggattg tcagcatcaa gcctcattgt tcctattagc gttatttta 119
atg gtg gtt ttt act aaa aga gtc gca ctc tcg tta ttt gtg ggc att 167
Met Val Val Phe Thr Lys Arg Val Ala Leu Ser Leu Phe Val Gly Ile
1 5 10 15

tta gtg agc gct gtt tta atg cat tcg tta cac ctt tcc caa ctc gta 215
Leu Val Ser Ala Val Leu Met His Ser Leu His Leu Ser Gln Leu Val
20 25 30

gaa tat att tat cat aaa atc act tcc gtt ttt tac act tac gag cca 263
Glu Tyr Ile Tyr His Lys Ile Thr Ser Val Phe Tyr Thr Tyr Glu Pro
35 40 45

gaa aag ggg ctt aat ttc aat ctt tcc aac ctc tat gtt ttt ggg ttt 311
Glu Lys Gly Leu Asn Phe Asn Leu Ser Asn Leu Tyr Val Phe Gly Phe
50 55 60

tta atc ttt tta ggc gtc tta agc caa gtg att tta aaa tcc ggt agc 359
Leu Ile Phe Leu Gly Val Leu Ser Gln Val Ile Leu Lys Ser Gly Ser
65 70 75 80

gtg caa aac ttt gtc aaa aaa gct aaa aaa tac tca aaa aac gct aaa 407
Val Gln Asn Phe Val Lys Lys Ala Lys Lys Tyr Ser Lys Asn Ala Lys
85 90 95

act ccc gaa ttt atc gcc ttt ttt tca ggt atc att att ttt gta gat 455
Thr Pro Glu Phe Ile Ala Phe Phe Ser Gly Ile Ile Ile Phe Val Asp
100 105 110

gat tat ttt aac gcc cta acc gtg ggg caa atc tca aag tct tta aac 503
Asp Tyr Phe Asn Ala Leu Thr Val Gly Gln Ile Ser Lys Ser Leu Asn
115 120 125

gac gct cat aac tcc aca cga gag cgc ttg gct tat att ata gac tcc 551
Asp Ala His Asn Ser Thr Arg Glu Arg Leu Ala Tyr Ile Ile Asp Ser
130 135 140

act tca gcg ccg gtg tgc ttg cta gtc ccc att tct agt tgg ggg gcg 599
Thr Ser Ala Pro Val Cys Leu Leu Val Pro Ile Ser Ser Trp Gly Ala
145 150 155 160

tat att atg ggg atc atg aat aac gac agc tcg ccc tta tta aaa gat 647
Tyr Ile Met Gly Ile Met Asn Asn Asp Ser Ser Pro Leu Leu Lys Asp
165 170 175

agt ttt tcg gtg ctt gtg caa agc tta agc agt aat tat tat gcg att 695
Ser Phe Ser Val Leu Val Gln Ser Leu Ser Ser Asn Tyr Tyr Ala Ile
180 185 190

ttt gca ctc att gca gtc ttt ctc acc att tta tgg caa atc aac ctc 743
Phe Ala Leu Ile Ala Val Phe Leu Thr Ile Leu Trp Gln Ile Asn Leu
195 200 205

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cct agc atg aga aag tat caa aac ata ggc gtg aag gat ttt tat agc	791
Pro Ser Met Arg Lys Tyr Gln Asn Ile Gly Val Lys Asp Phe Tyr Ser	
210 215 220	
gaa caa gaa gaa agc tct tca aaa cta gcc ccc ttg agt ttg tta ccc	839
Glu Gln Glu Glu Ser Ser Ser Lys Leu Ala Pro Leu Ser Leu Leu Pro	
225 230 235 240	
ctt tct att tta ttg ttg att gtg tcc att tca tca ttg ctt ttt tat	887
Leu Ser Ile Leu Leu Leu Ile Val Ser Ile Ser Ser Leu Leu Phe Tyr	
245 250 255	
aca gga gtg att tta aaa aac act gat gcg agt ttt tcg ctc ttt tat	935
Thr Gly Val Ile Leu Lys Asn Thr Asp Ala Ser Phe Ser Leu Phe Tyr	
260 265 270	
gga ggg ttg ttt tcg ctc atc gtt act tat ctt tta gct tat aag ttt	983
Gly Gly Leu Phe Ser Leu Ile Val Thr Tyr Leu Leu Ala Tyr Lys Phe	
275 280 285	
tta gaa aaa ggg agc ttt ttt aaa ctc atg ttg gat ggc ttt aag agt	1031
Leu Glu Lys Gly Ser Phe Phe Lys Leu Met Leu Asp Gly Phe Lys Ser	
290 295 300	
gtg ggg ccg gcg ata cta gtc tta acg ctc gct tgg gct atc ggg cct	1079
Val Gly Pro Ala Ile Leu Val Leu Thr Leu Ala Trp Ala Ile Gly Pro	
305 310 315 320	
gtg att aga gat gac gct caa aca ggg ctt tac ttg gct aac atc agc	1127
Val Ile Arg Asp Asp Ala Gln Thr Gly Leu Tyr Leu Ala Asn Ile Ser	
325 330 335	
aag ggg ttt tta aat aat gga gga ggc gtg tat atg cct tta atc ttt	1175
Lys Gly Phe Leu Asn Asn Gly Gly Gly Val Tyr Met Pro Leu Ile Phe	
340 345 350	
ttt tta atc tct ggg ttt atc gct ttt tct acc ggc aca agc tgg gga	1223
Phe Leu Ile Ser Gly Phe Ile Ala Phe Ser Thr Gly Thr Ser Trp Gly	
355 360 365	
gcg ttt gcg atc atg ctt ccc att gga gcg ggc atg gct agt gaa agc	1271
Ala Phe Ala Ile Met Leu Pro Ile Gly Ala Gly Met Ala Ser Glu Ser	
370 375 380	
gat att att ttg att gtt tca gcg att ctc tca ggc gcg gtt tat ggc	1319
Asp Ile Ile Leu Ile Val Ser Ala Ile Leu Ser Gly Ala Val Tyr Gly	
385 390 395 400	
gat cac aca agc cct att tct gac acg act ata cta tcg gct acg ggg	1367
Asp His Thr Ser Pro Ile Ser Asp Thr Thr Ile Leu Ser Ala Thr Gly	
405 410 415	
gca ggg tgt tcg gtg caa agc cat ttt atc acg caa ctc cct tat gcg	1415
Ala Gly Cys Ser Val Gln Ser His Phe Ile Thr Gln Leu Pro Tyr Ala	
420 425 430	

acc att gcg atg ctt tgc agc gcg gtg agt ttg ggg gtg gca agc ttt 1463
 Thr Ile Ala Met Leu Cys Ser Ala Val Ser Leu Gly Val Ala Ser Phe
 435 440 445

atg tat tcg cgt tcg ctc gct ctt tta atc ggt gtg gct ttg ctt gtg 1511
 Met Tyr Ser Arg Ser Leu Ala Leu Leu Ile Gly Val Ala Leu Leu Val
 450 455 460

ggg gtg ttt tat ctt tta aaa aaa ttt tat ggt gaa aat cta aaa act 1559
 Gly Val Phe Tyr Leu Leu Lys Lys Phe Tyr Gly Glu Asn Leu Lys Thr
 465 470 475 480

tgaatatga ttgaagaagc ttaaaaaatcc catttttttaa aattaaaata aggtttttatc 1619
 gatccctatt tgactcaaaa agagtcttat tccattatca atcaattaaa aaagggttatt 1679
 caaaaataac catacaatta taaaaatctt c 1710

<210> 92
 <211> 480
 <212> PRT
 <213> Helicobacter pylori

<400> 92
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 20 25 30
 Glu Tyr Ile Tyr His Lys Ile Thr Ser Val Phe Tyr Thr Tyr Glu Pro
 35 40 45
 Glu Lys Gly Leu Asn Phe Asn Leu Ser Asn Leu Tyr Val Phe Gly Phe
 50 55 60
 Leu Ile Phe Leu Gly Val Leu Ser Gln Val Ile Leu Lys Ser Gly Ser
 65 70 75 80
 Val Gln Asn Phe Val Lys Lys Ala Lys Lys Tyr Ser Lys Asn Ala Lys
 85 90 95
 Thr Pro Glu Phe Ile Ala Phe Phe Ser Gly Ile Ile Ile Phe Val Asp
 100 105 110
 Asp Tyr Phe Asn Ala Leu Thr Val Gly Gln Ile Ser Lys Ser Leu Asn
 115 120 125
 Asp Ala His Asn Ser Thr Arg Glu Arg Leu Ala Tyr Ile Ile Asp Ser
 130 135 140
 Thr Ser Ala Pro Val Cys Leu Leu Val Pro Ile Ser Ser Trp Gly Ala
 145 150 155 160
 Tyr Ile Met Gly Ile Met Asn Asn Asp Ser Ser Pro Leu Leu Lys Asp
 165 170 175
 Ser Phe Ser Val Leu Val Gln Ser Leu Ser Ser Asn Tyr Tyr Ala Ile
 180 185 190
 Phe Ala Leu Ile Ala Val Phe Leu Thr Ile Leu Trp Gln Ile Asn Leu
 195 200 205
 Pro Ser Met Arg Lys Tyr Gln Asn Ile Gly Val Lys Asp Phe Tyr Ser
 210 215 220
 Glu Gln Glu Glu Ser Ser Ser Lys Leu Ala Pro Leu Ser Leu Leu Pro
 225 230 235 240
 Leu Ser Ile Leu Leu Leu Ile Val Ser Ile Ser Ser Leu Leu Phe Tyr
 245 250 255

45	50	55	
gac aaa cgg aca ttt tat aag cga gcg ttc gct ttc acg atg aaa tcg			303
Asp Lys Arg Thr Phe Tyr Lys Arg Ala Phe Ala Phe Thr Met Lys Ser			
60	65	70	
ttg ttc ggt gaa aac ttg ctt ttg ttt gtc aaa tta aag cat tct gcg			351
Leu Phe Gly Glu Asn Leu Leu Leu Phe Val Lys Leu Lys His Ser Ala			
75	80	85	90
ttg acg agc aaa cac atg aaa ggg cct tta gaa aac cgc cat cac cat			399
Leu Thr Ser Lys His Met Lys Gly Pro Leu Glu Asn Arg His His His			
	95	100	105
tct ttc act aaa aat tat gaa aaa gcg gtt aat ggt tgt caa aag tat			447
Ser Phe Thr Lys Asn Tyr Glu Lys Ala Val Asn Gly Cys Gln Lys Tyr			
	110	115	120
ttc cat att aaa ttg cct gaa ggc gct cct agc aac ttc aaa tca ggt			495
Phe His Ile Lys Leu Pro Glu Gly Ala Pro Ser Asn Phe Lys Ser Gly			
	125	130	135
tca tac atg gcc act atg gtg gtg cgt ttt taaagcgtta tttgggggtat			545
Ser Tyr Met Ala Thr Met Val Val Arg Phe			
140	145		
tctttaatac ccttatcgtc ttttaaaata ccatctttta aaagcacaaa tttatttttt			605
agcccttttt taaatcttct taaa			629

<210> 94
 <211> 148
 <212> PRT
 <213> *Helicobacter pylori*

<400> 94

Ile Ser Leu Ser Val Lys His Thr Asp Asn Val Ile Ser Leu Arg Lys			
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Glu Asn Gly Val Arg Thr Leu Ile Ser Leu Gly Ile Leu Leu Ser Val			
	20	25	30
Leu Ser Gly Asp Asp Leu Lys Leu Tyr Ser Lys Leu Ser Val Tyr Ser			
	35	40	45
Ala Gly Ser Gly Met Ile Gly Ile Asp Ile Asp Lys Arg Thr Phe Tyr			
	50	55	60
Lys Arg Ala Phe Ala Phe Thr Met Lys Ser Leu Phe Gly Glu Asn Leu			
65	70	75	80
Leu Leu Phe Val Lys Leu Lys His Ser Ala Leu Thr Ser Lys His Met			
	85	90	95
Lys Gly Pro Leu Glu Asn Arg His His His Ser Phe Thr Lys Asn Tyr			
	100	105	110
Glu Lys Ala Val Asn Gly Cys Gln Lys Tyr Phe His Ile Lys Leu Pro			
	115	120	125
Glu Gly Ala Pro Ser Asn Phe Lys Ser Gly Ser Tyr Met Ala Thr Met			
	130	135	140
Val Val Arg Phe			
145			

<210> 95
 <211> 626
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (98)...(547)

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 Met Arg Cys Val Val Tyr
 1 5

tct atc gct aaa agt tcg cct tta gag tta gtg aaa atc tat caa aag 163
 Ser Ile Ala Lys Ser Ser Pro Leu Glu Leu Val Lys Ile Tyr Gln Lys
 10 15 20

caa tgc agg caa ttt gat tgc gag ctg gaa ttg gtg gat tta ttc cct 211
 Gln Cys Arg Gln Phe Asp Cys Glu Leu Glu Leu Val Asp Leu Phe Pro
 25 30 35

aaa aat acc gcc aac gct caa aaa gtt tct aaa aaa ctg gct caa aaa 259
 Lys Asn Thr Ala Asn Ala Gln Lys Val Ser Lys Lys Leu Ala Gln Lys
 40 45 50

agc tac tct cta gct ttt gag ccg tat tta aac cct aag gca aaa aat 307
 Ser Tyr Ser Leu Ala Phe Glu Pro Tyr Leu Asn Pro Lys Ala Lys Asn
 55 60 65 70

atc gcc tta cac cct aaa gct caa agg ggc gat agc ttt gcg ttt agt 355
 Ile Ala Leu His Pro Lys Ala Gln Arg Gly Asp Ser Phe Ala Phe Ser
 75 80 85

aaa atg tta gaa aat cat ctt aat att aat ttt ttt atc gct gga gcg 403
 Lys Met Leu Glu Asn His Leu Asn Ile Asn Phe Phe Ile Ala Gly Ala
 90 95 100

tat ggg ttt gaa gaa aat ttt tta aag gat tgt caa gct tgg agt ttg 451
 Tyr Gly Phe Glu Glu Asn Phe Leu Lys Asp Cys Gln Ala Trp Ser Leu
 105 110 115

agc gag atg act ttt agc cat gaa gtg gct aaa att gtc tta tgc gag 499
 Ser Glu Met Thr Phe Ser His Glu Val Ala Lys Ile Val Leu Cys Glu
 120 125 130

caa atc tat agg gct tta agc att att ttt aag cat cca tac cat aaa 547
 Gln Ile Tyr Arg Ala Leu Ser Ile Ile Phe Lys His Pro Tyr His Lys
 135 140 145 150

taggaggtgc gcatgcgttt ttacattatc ttacatttt tgtttattgt gggttttggt 607
 gtgtttgttt atagtattg 626

<210> 96
 <211> 150
 <212> PRT
 <213> Helicobacter pylori

<400> 96
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 Val Lys Ile Tyr Gln Lys Gln Cys Arg Gln Phe Asp Cys Glu Leu Glu
 20 25 30
 Leu Val Asp Leu Phe Pro Lys Asn Thr Ala Asn Ala Gln Lys Val Ser
 35 40 45
 Lys Lys Leu Ala Gln Lys Ser Tyr Ser Leu Ala Phe Glu Pro Tyr Leu
 50 55 60
 Asn Pro Lys Ala Lys Asn Ile Ala Leu His Pro Lys Ala Gln Arg Gly
 65 70 75 80
 Asp Ser Phe Ala Phe Ser Lys Met Leu Glu Asn His Leu Asn Ile Asn
 85 90 95
 Phe Phe Ile Ala Gly Ala Tyr Gly Phe Glu Glu Asn Phe Leu Lys Asp
 100 105 110
 Cys Gln Ala Trp Ser Leu Ser Glu Met Thr Phe Ser His Glu Val Ala
 115 120 125
 Lys Ile Val Leu Cys Glu Gln Ile Tyr Arg Ala Leu Ser Ile Ile Phe
 130 135 140
 Lys His Pro Tyr His Lys
 145 150

<210> 97
 <211> 1053
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (110)...(976)

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 agcaaaactt ggatacaatc ctaacaaaac tgcaaaatta aggaaaaac atg gga ttt 118
 Met Gly Phe
 1
 gca gat ttc ttt aaa aat ttt aag atc aat aaa ttg cgg aca gcg cca 166
 Ala Asp Phe Phe Lys Asn Phe Lys Ile Asn Lys Leu Arg Thr Ala Pro
 5 10 15
 agt aag gaa gaa cag cca agc cat tgg gtg aaa tgc cct aaa tgt tat 214
 Ser Lys Glu Glu Gln Pro Ser His Trp Val Lys Cys Pro Lys Cys Tyr
 20 25 30 35
 gcg tta atg tat cat aaa gaa gtg ttt agt aaa tac agc gtg tgt ttg 262
 Ala Leu Met Tyr His Lys Glu Val Phe Ser Lys Tyr Ser Val Cys Leu
 40 45 50

aaa tgc cat tac cat ttc cgc atg aaa gcg gct gaa agg att gaa ttt	310
Lys Cys His Tyr His Phe Arg Met Lys Ala Ala Glu Arg Ile Glu Phe	
55 60 65	
tta tgc gat gtg ggg agt ttt gaa gag ttt gac aag cat tta cgg cct	358
Leu Cys Asp Val Gly Ser Phe Glu Glu Phe Asp Lys His Leu Arg Pro	
70 75 80	
aat gat cct tta aat ttc gtg gat aaa gag agc tat aaa caa cgc att	406
Asn Asp Pro Leu Asn Phe Val Asp Lys Glu Ser Tyr Lys Gln Arg Ile	
85 90 95	
aaa aaa tac gaa aaa agg act aac cgc cca agc tca gtg atc agc ggt	454
Lys Lys Tyr Glu Lys Arg Thr Asn Arg Pro Ser Ser Val Ile Ser Gly	
100 105 110 115	
gag gct aaa atc aac cgc atg cct ttg cag atc gtg gtg ttt gat ttt	502
Glu Ala Lys Ile Asn Arg Met Pro Leu Gln Ile Val Val Phe Asp Phe	
120 125 130	
agc ttt atg ggg ggg agt tta ggc tct gtg gag ggc gaa aag atc gta	550
Ser Phe Met Gly Gly Ser Leu Gly Ser Val Glu Gly Glu Lys Ile Val	
135 140 145	
aga gca atc aat cgc gcg gtc gct aaa aga gaa gcg tta ttg att gtt	598
Arg Ala Ile Asn Arg Ala Val Ala Lys Arg Glu Ala Leu Leu Ile Val	
150 155 160	
tca gcg agt ggg ggg gct agg atg caa gaa tcc act tat tcg ctc atg	646
Ser Ala Ser Gly Gly Ala Arg Met Gln Glu Ser Thr Tyr Ser Leu Met	
165 170 175	
caa atg gct aaa acg agc gcg gct ttg aac cga ttg agt gag gcc aaa	694
Gln Met Ala Lys Thr Ser Ala Ala Leu Asn Arg Leu Ser Glu Ala Lys	
180 185 190 195	
ctc cct ttc att tcg ctc tta agc gat ccc act tat ggg ggc gtt agc	742
Leu Pro Phe Ile Ser Leu Leu Ser Asp Pro Thr Tyr Gly Gly Val Ser	
200 205 210	
gca tct ttt gct ttt tta ggg gat ctc att atc gca gag cca ggg gcg	790
Ala Ser Phe Ala Phe Leu Gly Asp Leu Ile Ile Ala Glu Pro Gly Ala	
215 220 225	
atg ata ggc ttt gcg ggg cct agg gtg att aag caa act ata ggg gcg	838
Met Ile Gly Phe Ala Gly Pro Arg Val Ile Lys Gln Thr Ile Gly Ala	
230 235 240	
gat ttg cct gag ggc ttt caa aca gcg gaa ttt tta tta gag cat ggc	886
Asp Leu Pro Glu Gly Phe Gln Thr Ala Glu Phe Leu Leu Glu His Gly	
245 250 255	
ttg att gat atg att gtg cac agg aag gat ttg aag aag act ttg agc	934
Leu Ile Asp Met Ile Val His Arg Lys Asp Leu Lys Lys Thr Leu Ser	
260 265 270 275	

gat ctc atc gct atg atg acg cat aag act tca aag att ttt
 Asp Leu Ile Ala Met Met Thr His Lys Thr Ser Lys Ile Phe
 280 285

976

taaagtttta acattgatgc gttgcgtggg gtattctatc gctaaaagtt cgccttttaga 1036
 gtttagtgaat atctatc 1053

<210> 98
 <211> 289
 <212> PRT
 <213> Helicobacter pylori

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 Lys Cys Tyr Ala Leu Met Tyr His Lys Glu Val Phe Ser Lys Tyr Ser
 35 40 45
 Val Cys Leu Lys Cys His Tyr His Phe Arg Met Lys Ala Ala Glu Arg
 50 55 60
 Ile Glu Phe Leu Cys Asp Val Gly Ser Phe Glu Glu Phe Asp Lys His
 65 70 75 80
 Leu Arg Pro Asn Asp Pro Leu Asn Phe Val Asp Lys Glu Ser Tyr Lys
 85 90 95
 Gln Arg Ile Lys Lys Tyr Glu Lys Arg Thr Asn Arg Pro Ser Ser Val
 100 105 110
 Ile Ser Gly Glu Ala Lys Ile Asn Arg Met Pro Leu Gln Ile Val Val
 115 120 125
 Phe Asp Phe Ser Phe Met Gly Gly Ser Leu Gly Ser Val Glu Gly Glu
 130 135 140
 Lys Ile Val Arg Ala Ile Asn Arg Ala Val Ala Lys Arg Glu Ala Leu
 145 150 155 160
 Leu Ile Val Ser Ala Ser Gly Gly Ala Arg Met Gln Glu Ser Thr Tyr
 165 170 175
 Ser Leu Met Gln Met Ala Lys Thr Ser Ala Ala Leu Asn Arg Leu Ser
 180 185 190
 Glu Ala Lys Leu Pro Phe Ile Ser Leu Leu Ser Asp Pro Thr Tyr Gly
 195 200 205
 Gly Val Ser Ala Ser Phe Ala Phe Leu Gly Asp Leu Ile Ile Ala Glu
 210 215 220
 Pro Gly Ala Met Ile Gly Phe Ala Gly Pro Arg Val Ile Lys Gln Thr
 225 230 235 240
 Ile Gly Ala Asp Leu Pro Glu Gly Phe Gln Thr Ala Glu Phe Leu Leu
 245 250 255
 Glu His Gly Leu Ile Asp Met Ile Val His Arg Lys Asp Leu Lys Lys
 260 265 270
 Thr Leu Ser Asp Leu Ile Ala Met Met Thr His Lys Thr Ser Lys Ile
 275 280 285
 Phe

<210> 99

<211> 810
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (95)...(706)

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 Met Gln Gly Phe Leu Leu Gln
 1 5

aca caa agc ata aga gat gaa gat ttg atc gtg cgc gtt tta acc aaa 163
 Thr Gln Ser Ile Arg Asp Glu Asp Leu Ile Val Arg Val Leu Thr Lys
 10 15 20

aac cag ctc aaa acc ctc tat cgt ttc tat ggc aaa cgc cat agc gtg 211
 Asn Gln Leu Lys Thr Leu Tyr Arg Phe Tyr Gly Lys Arg His Ser Val
 25 30 35

ctg aat gtg ggg cgt aaa att gat ttt gaa gaa gaa aac gat gat aag 259
 Leu Asn Val Gly Arg Lys Ile Asp Phe Glu Glu Glu Asn Asp Asp Lys
 40 45 50 55

ttt tta ccc aag tta agg aat att ttg cat tta ggc tat att tgg gaa 307
 Phe Leu Pro Lys Leu Arg Asn Ile Leu His Leu Gly Tyr Ile Trp Glu
 60 65 70

aga gaa atg gag cgc ttg ttt ttt tgg caa cgc ttt tgc gct ctc ttg 355
 Arg Glu Met Glu Arg Leu Phe Phe Trp Gln Arg Phe Cys Ala Leu Leu
 75 80 85

ttt agg cat tta gaa ggc gtg cat tct tta gat agc gtc tat ttt gac 403
 Phe Arg His Leu Glu Gly Val His Ser Leu Asp Ser Val Tyr Phe Asp
 90 95 100

act tta gat gat ggg gct aac aaa ctc gcc aaa cag cac ccc tta aga 451
 Thr Leu Asp Asp Gly Ala Asn Lys Leu Ala Lys Gln His Pro Leu Arg
 105 110 115

gtg att tta gaa atg tat gca acg ctt ttg aat ttt gaa ggg cgc ttg 499
 Val Ile Leu Glu Met Tyr Ala Thr Leu Leu Asn Phe Glu Gly Arg Leu
 120 125 130 135

caa agt tac aat tct tgt ttt tta tgc gat gca aaa tta gag cgt tct 547
 Gln Ser Tyr Asn Ser Cys Phe Leu Cys Asp Ala Lys Leu Glu Arg Ser
 140 145 150

gtc gct tta gcg caa ggg ttt att cta gcg cac ccc tct tgt ttg aaa 595
 Val Ala Leu Ala Gln Gly Phe Ile Leu Ala His Pro Ser Cys Leu Lys
 155 160 165

gct aaa agc cta aat tta gaa aaa atc caa gct ttt ttt cgc act caa 643

Ala Lys Ser Leu Asn Leu Glu Lys Ile Gln Ala Phe Phe Arg Thr Gln
170 175 180

agc acg att gat tta gaa aca gaa gaa gta gaa gaa tta tgg cgc acg 691
Ser Thr Ile Asp Leu Glu Thr Glu Glu Val Glu Glu Leu Trp Arg Thr
185 190 195

ctg aat tta ggg ttt tgaaagggtta aaaatgaaat ttaaattttt gaatatggat 746
Leu Asn Leu Gly Phe
200

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gtca 810

<210> 100
<211> 204
<212> PRT
<213> Helicobacter pylori

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20 25 30
Tyr Gly Lys Arg His Ser Val Leu Asn Val Gly Arg Lys Ile Asp Phe
35 40 45
Glu Glu Glu Asn Asp Asp Lys Phe Leu Pro Lys Leu Arg Asn Ile Leu
50 55 60
His Leu Gly Tyr Ile Trp Glu Arg Glu Met Glu Arg Leu Phe Phe Trp
65 70 75 80
Gln Arg Phe Cys Ala Leu Leu Phe Arg His Leu Glu Gly Val His Ser
85 90 95
Leu Asp Ser Val Tyr Phe Asp Thr Leu Asp Asp Gly Ala Asn Lys Leu
100 105 110
Ala Lys Gln His Pro Leu Arg Val Ile Leu Glu Met Tyr Ala Thr Leu
115 120 125
Leu Asn Phe Glu Gly Arg Leu Gln Ser Tyr Asn Ser Cys Phe Leu Cys
130 135 140
Asp Ala Lys Leu Glu Arg Ser Val Ala Leu Ala Gln Gly Phe Ile Leu
145 150 155 160
Ala His Pro Ser Cys Leu Lys Ala Lys Ser Leu Asn Leu Glu Lys Ile
165 170 175
Gln Ala Phe Phe Arg Thr Gln Ser Thr Ile Asp Leu Glu Thr Glu Glu
180 185 190
Val Glu Glu Leu Trp Arg Thr Leu Asn Leu Gly Phe
195 200

<210> 101
<211> 999
<212> DNA
<213> Helicobacter pylori

<220>
<221> CDS

<222> (76)...(927)

<400> 101

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atttaaggat tgatc atg aac gct tgg aat acg att tat gat caa ttt aac 111
      Met Asn Ala Trp Asn Thr Ile Tyr Asp Gln Phe Asn
        1             5             10

cct atc gct ttt agt ctt ggc agt att gaa gtg cat tgg tat ggt ttg 159
Pro Ile Ala Phe Ser Leu Gly Ser Ile Glu Val His Trp Tyr Gly Leu
      15             20             25

gcg tat gcg tgt gcg att gtt acc gct ttt tat atg gcg tta aga atg 207
Ala Tyr Ala Cys Ala Ile Val Thr Ala Phe Tyr Met Ala Leu Arg Met
      30             35             40

atc caa aaa gac ccc aag cga ttc ccc att gaa agg aag gaa ttt gag 255
Ile Gln Lys Asp Pro Lys Arg Phe Pro Ile Glu Arg Lys Glu Phe Glu
      45             50             55             60

agt tat ttt tta tgg gcg gag ctt ggc att gtg cta ggg gca agg ata 303
Ser Tyr Phe Leu Trp Ala Glu Leu Gly Ile Val Leu Gly Ala Arg Ile
      65             70             75

gga tac att ctt att tat gag cct aat tct ggc tat tat ttg acg cat 351
Gly Tyr Ile Leu Ile Tyr Glu Pro Asn Ser Gly Tyr Tyr Leu Thr His
      80             85             90

ttt tgg caa atc ttt aac cct ttt gat agc cat ggg aat ttt gta ggc 399
Phe Trp Gln Ile Phe Asn Pro Phe Asp Ser His Gly Asn Phe Val Gly
      95             100             105

att cgt ggg atg agc tat cat ggg ggg ttg gtg ggg ttt ttg atc gct 447
Ile Arg Gly Met Ser Tyr His Gly Gly Leu Val Gly Phe Leu Ile Ala
      110             115             120

tcg tat ctt tat agc cgt aag gat ttg aaa aag ctt ttg att tat ttg 495
Ser Tyr Leu Tyr Ser Arg Lys Asp Leu Lys Lys Leu Leu Ile Tyr Leu
      125             130             135             140

gat ttg att gcg atc agc ctg cct tta ggg tat gtt ttt ggg agg att 543
Asp Leu Ile Ala Ile Ser Leu Pro Leu Gly Tyr Val Phe Gly Arg Ile
      145             150             155

ggg aat ttt tta aac cag gag ctt gtg gga aga att gtc ccc aaa gac 591
Gly Asn Phe Leu Asn Gln Glu Leu Val Gly Arg Ile Val Pro Lys Asp
      160             165             170

agc cat tta ggg caa atc ata ggc att atg gtg gat aat gag ttg cgt 639
Ser His Leu Gly Gln Ile Ile Gly Ile Met Val Asp Asn Glu Leu Arg
      175             180             185

tat ccc agc caa ttg att gaa gcg ttt tta gag ggg gtt atc gtg ttt 687
Tyr Pro Ser Gln Leu Ile Glu Ala Phe Leu Glu Gly Val Ile Val Phe
      190             195             200
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tta atg gta atg tgg gct aaa aaa cac acc aaa acg cat ggg ttg ctg 735
 Leu Met Val Met Trp Ala Lys Lys His Thr Lys Thr His Gly Leu Leu
 205 210 215 220

 att gtg gtt tat ggt ttg ggg tat tcc ttg atg cgc ttt att gcg gaa 783
 Ile Val Val Tyr Gly Leu Gly Tyr Ser Leu Met Arg Phe Ile Ala Glu
 225 230 235

 ttt tac aga gag ccg gac agc caa atg ggg gtt tat ttt tta aat ttg 831
 Phe Tyr Arg Glu Pro Asp Ser Gln Met Gly Val Tyr Phe Leu Asn Leu
 240 245 250

 agc atg ggg cag att tta agc tta ttt atg gta att gtt tcg tta ggg 879
 Ser Met Gly Gln Ile Leu Ser Leu Phe Met Val Ile Val Ser Leu Gly
 255 260 265

 att tta ttg tat gct aca aaa aat tct aaa aaa ata aag gaa aat caa 927
 Ile Leu Leu Tyr Ala Thr Lys Asn Ser Lys Lys Ile Lys Glu Asn Gln
 270 275 280

 tgaaatTTTT ggatcaagaa aaaagaagac aattattaaa cgagcgccat tcttgcaaga 987
 tgtttgatag cc 999

<210> 102
 <211> 284
 <212> PRT
 <213> Helicobacter pylori

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 Ala Ile Val Thr Ala Phe Tyr Met Ala Leu Arg Met Ile Gln Lys Asp
 35 40 45
 Pro Lys Arg Phe Pro Ile Glu Arg Lys Glu Phe Glu Ser Tyr Phe Leu
 50 55 60
 Trp Ala Glu Leu Gly Ile Val Leu Gly Ala Arg Ile Gly Tyr Ile Leu
 65 70 75 80
 Ile Tyr Glu Pro Asn Ser Gly Tyr Tyr Leu Thr His Phe Trp Gln Ile
 85 90 95
 Phe Asn Pro Phe Asp Ser His Gly Asn Phe Val Gly Ile Arg Gly Met
 100 105 110
 Ser Tyr His Gly Gly Leu Val Gly Phe Leu Ile Ala Ser Tyr Leu Tyr
 115 120 125
 Ser Arg Lys Asp Leu Lys Lys Leu Leu Ile Tyr Leu Asp Leu Ile Ala
 130 135 140
 Ile Ser Leu Pro Leu Gly Tyr Val Phe Gly Arg Ile Gly Asn Phe Leu
 145 150 155 160
 Asn Gln Glu Leu Val Gly Arg Ile Val Pro Lys Asp Ser His Leu Gly
 165 170 175
 Gln Ile Ile Gly Ile Met Val Asp Asn Glu Leu Arg Tyr Pro Ser Gln
 180 185 190
 Leu Ile Glu Ala Phe Leu Glu Gly Val Ile Val Phe Leu Met Val Met

ggg gca tgg ggg ctt ggc tgg gaa gtg tgg ctt gat ggc atg gaa gtt	496
Gly Ala Trp Gly Leu Gly Trp Glu Val Trp Leu Asp Gly Met Glu Val	
125 130 135	
acg caa ttc act tat ttc cag caa gtg ggg ggc att gct tgt agc cct	544
Thr Gln Phe Thr Tyr Phe Gln Gln Val Gly Gly Ile Ala Cys Ser Pro	
140 145 150	
att cct gta gag atc act tac ggc tta gaa aga tta gcg atg tat gtg	592
Ile Pro Val Glu Ile Thr Tyr Gly Leu Glu Arg Leu Ala Met Tyr Val	
155 160 165	
caa aaa gtg gaa aat atc cta gag att gaa tgg gct aaa aaa aat cat	640
Gln Lys Val Glu Asn Ile Leu Glu Ile Glu Trp Ala Lys Lys Asn His	
170 175 180 185	
gac agc gtg aat tac gca caa gtg cat ttg gaa agc gaa tac gaa ttc	688
Asp Ser Val Asn Tyr Ala Gln Val His Leu Glu Ser Glu Tyr Glu Phe	
190 195 200	
agc aag tat cat ttt gaa aca gcg agc gtg aaa cgg cta tta gaa atg	736
Ser Lys Tyr His Phe Glu Thr Ala Ser Val Lys Arg Leu Leu Glu Met	
205 210 215	
ttt aaa aac gct caa gcc gaa gcc ttg cat tgc ttg gaa aac aag ctc	784
Phe Lys Asn Ala Gln Ala Glu Ala Leu His Cys Leu Glu Asn Lys Leu	
220 225 230	
ccc ttg ccg gct tat gat ttt gtg atg tta tgc tgc cat ttt ttc aat	832
Pro Leu Pro Ala Tyr Asp Phe Val Met Leu Cys Ser His Phe Phe Asn	
235 240 245	
att tta gac gcc aga aaa gcg att tgc gtg gct gaa agg caa aat tat	880
Ile Leu Asp Ala Arg Lys Ala Ile Ser Val Ala Glu Arg Gln Asn Tyr	
250 255 260 265	
att tta caa atc agg gat tta gcc aaa ggg tgt gcg ctt ctt tat aaa	928
Ile Leu Gln Ile Arg Asp Leu Ala Lys Gly Cys Ala Leu Leu Tyr Lys	
270 275 280	
gaa caa gaa gaa gag agg gaa gag cgt tta aaa aac gct tta aca aag	976
Glu Gln Glu Glu Glu Arg Glu Glu Arg Leu Lys Asn Ala Leu Thr Lys	
285 290 295	
gct gaa aat ggc gtt agt taaggaagtg ttggtagttt tgaatgcct	1024
Ala Glu Asn Gly Val Ser	
300	
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<210> 104	
<211> 303	
<212> PRT	

<213> Helicobacter pylori

<400> 104

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          20          25          30
Gly Thr Phe His Pro Ala Thr Leu Leu Arg Ser Leu Asp Lys Lys Pro
          35          40          45
Trp Asn Val Ala Tyr Val Ala Pro Ser Arg Arg Pro Thr Asp Gly Arg
          50          55          60
Tyr Gly Glu Asn Pro Asn Arg Leu Gly Ser Tyr Tyr Gln Phe Gln Val
65          70          75          80
Val Ile Lys Pro Ser Pro Ser Asn Ile Gln Glu Leu Tyr Leu Lys Ser
          85          90          95
Leu Glu Val Leu Gly Ile Asn Leu Asn Glu His Asp Ile Arg Phe Val
          100          105          110
Glu Asp Asn Trp Glu Ser Pro Thr Leu Gly Ala Trp Gly Leu Gly Trp
          115          120          125
Glu Val Trp Leu Asp Gly Met Glu Val Thr Gln Phe Thr Tyr Phe Gln
          130          135          140
Gln Val Gly Gly Ile Ala Cys Ser Pro Ile Pro Val Glu Ile Thr Tyr
145          150          155          160
Gly Leu Glu Arg Leu Ala Met Tyr Val Gln Lys Val Glu Asn Ile Leu
          165          170          175
Glu Ile Glu Trp Ala Lys Lys Asn His Asp Ser Val Asn Tyr Ala Gln
          180          185          190
Val His Leu Glu Ser Glu Tyr Glu Phe Ser Lys Tyr His Phe Glu Thr
          195          200          205
Ala Ser Val Lys Arg Leu Leu Glu Met Phe Lys Asn Ala Gln Ala Glu
          210          215          220
Ala Leu His Cys Leu Glu Asn Lys Leu Pro Leu Pro Ala Tyr Asp Phe
225          230          235          240
Val Met Leu Cys Ser His Phe Phe Asn Ile Leu Asp Ala Arg Lys Ala
          245          250          255
Ile Ser Val Ala Glu Arg Gln Asn Tyr Ile Leu Gln Ile Arg Asp Leu
          260          265          270
Ala Lys Gly Cys Ala Leu Leu Tyr Lys Glu Gln Glu Glu Glu Arg Glu
          275          280          285
Glu Arg Leu Lys Asn Ala Leu Thr Lys Ala Glu Asn Gly Val Ser
          290          295          300
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<210> 105

<211> 1620

<212> DNA

<213> Helicobacter pylori

<220>

<221> CDS

<222> (66)...(1538)

<400> 105

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Met	Ala	Gln	Lys	Thr	Leu	Leu	Ile	Ile	Thr	Asp	Gly	Ile	Gly	Tyr		
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Arg	Lys	Asp	Ser	Asp	His	Asn	Ala	Phe	Phe	His	Ala	Lys	Lys	Pro	Thr	
				20					25					30		
tat	gat	ttg	atg	ttt	aaa	acc	ttg	cct	tat	agc	ctg	att	gat	acg	cat	206
Tyr	Asp	Leu	Met	Phe	Lys	Thr	Leu	Pro	Tyr	Ser	Leu	Ile	Asp	Thr	His	
			35					40					45			
ggc	ttg	agc	gtg	ggc	tta	cct	aag	ggg	caa	atg	gga	aat	tct	gaa	gtg	254
Gly	Leu	Ser	Val	Gly	Leu	Pro	Lys	Gly	Gln	Met	Gly	Asn	Ser	Glu	Val	
		50					55					60				
ggg	cat	atg	tgt	att	ggg	gct	ggg	agg	gtg	ctc	tat	cag	gat	tta	gtc	302
Gly	His	Met	Cys	Ile	Gly	Ala	Gly	Arg	Val	Leu	Tyr	Gln	Asp	Leu	Val	
	65					70					75					
aaa	att	tct	tta	agc	ctt	caa	aac	gat	gaa	tta	aaa	aac	aac	ccc	gct	350
Lys	Ile	Ser	Leu	Ser	Leu	Gln	Asn	Asp	Glu	Leu	Lys	Asn	Asn	Pro	Ala	
	80					85				90					95	
ttt	tta	aac	acg	atc	caa	aaa	agc	cct	gtg	gtg	cat	ctt	atg	ggg	tta	398
Phe	Leu	Asn	Thr	Ile	Gln	Lys	Ser	Pro	Val	Val	His	Leu	Met	Gly	Leu	
			100						105					110		
atg	agc	gat	gga	ggc	gtg	cat	tca	cac	att	gag	cat	ttt	atc	gct	ctg	446
Met	Ser	Asp	Gly	Gly	Val	His	Ser	His	Ile	Glu	His	Phe	Ile	Ala	Leu	
			115					120					125			
gct	tta	gag	tgt	gaa	aaa	tcc	cat	aaa	aaa	gtc	tgt	ctg	cat	tta	atc	494
Ala	Leu	Glu	Cys	Glu	Lys	Ser	His	Lys	Lys	Val	Cys	Leu	His	Leu	Ile	
		130					135					140				
acc	gat	ggg	cgc	gat	gtc	gct	cct	aaa	agc	gct	tta	act	tat	tta	aaa	542
Thr	Asp	Gly	Arg	Asp	Val	Ala	Pro	Lys	Ser	Ala	Leu	Thr	Tyr	Leu	Lys	
	145					150					155					
caa	atg	caa	aat	atc	tgc	aat	gaa	agc	att	caa	atc	gct	acc	ata	agc	590
Gln	Met	Gln	Asn	Ile	Cys	Asn	Glu	Ser	Ile	Gln	Ile	Ala	Thr	Ile	Ser	
	160				165				170					175		
ggg	cgt	ttt	tat	gcc	atg	gat	agg	gat	aag	cgc	ttt	gaa	agg	att	gag	638
Gly	Arg	Phe	Tyr	Ala	Met	Asp	Arg	Asp	Lys	Arg	Phe	Glu	Arg	Ile	Glu	
			180						185					190		
ctt	gcg	tat	cat	agc	tta	atg	ggg	ctt	aat	cac	acg	cct	tta	agc	cct	686
Leu	Ala	Tyr	His	Ser	Leu	Met	Gly	Leu	Asn	His	Thr	Pro	Leu	Ser	Pro	
			195					200					205			
agc	gag	tat	atc	caa	agc	cag	tat	gat	aaa	aat	atc	acc	gat	gaa	ttt	734
Ser	Glu	Tyr	Ile	Gln	Ser	Gln	Tyr	Asp	Lys	Asn	Ile	Thr	Asp	Glu	Phe	
		210					215					220				

atc atg ccc gct tgt ttt aaa aat tat tgc ggc atg caa gat gat gag	782
Ile Met Pro Ala Cys Phe Lys Asn Tyr Cys Gly Met Gln Asp Asp Glu	
225 230 235	
agt ttt att ttt atc aat ttc agg aat gat agg gct aga gaa atc gtg	830
Ser Phe Ile Phe Ile Asn Phe Arg Asn Asp Arg Ala Arg Glu Ile Val	
240 245 250 255	
agc gct tta ggc caa aaa caa ttc agt ggc ttt aag cgc caa gtt ttt	878
Ser Ala Leu Gly Gln Lys Gln Phe Ser Gly Phe Lys Arg Gln Val Phe	
260 265 270	
aaa aaa ctc cat atc gct acc atg acg cct tat gat aac act ttc ccc	926
Lys Lys Leu His Ile Ala Thr Met Thr Pro Tyr Asp Asn Thr Phe Pro	
275 280 285	
tac cct gtt tta ttc ccc aaa gaa agc gtt caa aac acg ctc gct gaa	974
Tyr Pro Val Leu Phe Pro Lys Glu Ser Val Gln Asn Thr Leu Ala Glu	
290 295 300	
gtg gtc tct caa cac aac ctg acc caa agc cat atc gct gaa act gaa	1022
Val Val Ser Gln His Asn Leu Thr Gln Ser His Ile Ala Glu Thr Glu	
305 310 315	
aaa tac gcg cat gta acc ttt ttc atc aat ggc gga gtg gag acg cct	1070
Lys Tyr Ala His Val Thr Phe Phe Ile Asn Gly Gly Val Glu Thr Pro	
320 325 330 335	
ttt aaa aat gaa aac cgg gtg ctt atc caa agc cct aaa gtt acc act	1118
Phe Lys Asn Glu Asn Arg Val Leu Ile Gln Ser Pro Lys Val Thr Thr	
340 345 350	
tat gac tta aag cct gaa atg agc gct aaa gaa gta acc ctt gcg gtg	1166
Tyr Asp Leu Lys Pro Glu Met Ser Ala Lys Glu Val Thr Leu Ala Val	
355 360 365	
tta gag caa atg aaa cta ggc acg gat ttg atc att gtg aat ttt gct	1214
Leu Glu Gln Met Lys Leu Gly Thr Asp Leu Ile Ile Val Asn Phe Ala	
370 375 380	
aat ggc gat atg gta ggg cat acg ggg aat ttt gaa gcg agc gtc aaa	1262
Asn Gly Asp Met Val Gly His Thr Gly Asn Phe Glu Ala Ser Val Lys	
385 390 395	
gcg gtg gaa gca gtg gat gca tgt tta ggg gaa atc ctt tca ctg gct	1310
Ala Val Glu Ala Val Asp Ala Cys Leu Gly Glu Ile Leu Ser Leu Ala	
400 405 410 415	
aaa aaa ttg gat tac gcc atg ctt tta acc agc gat cat ggg aat tgc	1358
Lys Lys Leu Asp Tyr Ala Met Leu Leu Thr Ser Asp His Gly Asn Cys	
420 425 430	
gag cgc atg aaa gac gaa aac caa aac ccc tta acc aac cac acc gcc	1406
Glu Arg Met Lys Asp Glu Asn Gln Asn Pro Leu Thr Asn His Thr Ala	
435 440 445	

ggg agc gtg tat tgc ttt gtt tta ggg gat gga gtc aaa tcc ata aaa 1454
 Gly Ser Val Tyr Cys Phe Val Leu Gly Asp Gly Val Lys Ser Ile Lys
 450 455 460

aac gga gcc tta aac aat atc gct agc agc gtg tta aaa ctc atg ggc 1502
 Asn Gly Ala Leu Asn Asn Ile Ala Ser Ser Val Leu Lys Leu Met Gly
 465 470 475

ctt aaa gcc cca gca acg atg gac gaa ccc cta ttt taaactaaag 1548
 Leu Lys Ala Pro Ala Thr Met Asp Glu Pro Leu Phe
 480 485 490

gaaaagaatg caaattgatg acgcattatt gcaacgcttg gaaaaattga gcatgctaga 1608
 gattaaagat ga 1620

<210> 106

<211> 491

<212> PRT

<213> Helicobacter pylori

<400> 106

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 Lys Asp Ser Asp His Asn Ala Phe Phe His Ala Lys Lys Pro Thr Tyr
 20 25 30
 Asp Leu Met Phe Lys Thr Leu Pro Tyr Ser Leu Ile Asp Thr His Gly
 35 40 45
 Leu Ser Val Gly Leu Pro Lys Gly Gln Met Gly Asn Ser Glu Val Gly
 50 55 60
 His Met Cys Ile Gly Ala Gly Arg Val Leu Tyr Gln Asp Leu Val Lys
 65 70 75 80
 Ile Ser Leu Ser Leu Gln Asn Asp Glu Leu Lys Asn Asn Pro Ala Phe
 85 90 95
 Leu Asn Thr Ile Gln Lys Ser Pro Val Val His Leu Met Gly Leu Met
 100 105 110
 Ser Asp Gly Gly Val His Ser His Ile Glu His Phe Ile Ala Leu Ala
 115 120 125
 Leu Glu Cys Glu Lys Ser His Lys Lys Val Cys Leu His Leu Ile Thr
 130 135 140
 Asp Gly Arg Asp Val Ala Pro Lys Ser Ala Leu Thr Tyr Leu Lys Gln
 145 150 155 160
 Met Gln Asn Ile Cys Asn Glu Ser Ile Gln Ile Ala Thr Ile Ser Gly
 165 170 175
 Arg Phe Tyr Ala Met Asp Arg Asp Lys Arg Phe Glu Arg Ile Glu Leu
 180 185 190
 Ala Tyr His Ser Leu Met Gly Leu Asn His Thr Pro Leu Ser Pro Ser
 195 200 205
 Glu Tyr Ile Gln Ser Gln Tyr Asp Lys Asn Ile Thr Asp Glu Phe Ile
 210 215 220
 Met Pro Ala Cys Phe Lys Asn Tyr Cys Gly Met Gln Asp Asp Glu Ser
 225 230 235 240
 Phe Ile Phe Ile Asn Phe Arg Asn Asp Arg Ala Arg Glu Ile Val Ser
 245 250 255
 Ala Leu Gly Gln Lys Gln Phe Ser Gly Phe Lys Arg Gln Val Phe Lys

	260		265		270										
Lys	Leu	His	Ile	Ala	Thr	Met	Thr	Pro	Tyr	Asp	Asn	Thr	Phe	Pro	Tyr
	275						280					285			
Pro	Val	Leu	Phe	Pro	Lys	Glu	Ser	Val	Gln	Asn	Thr	Leu	Ala	Glu	Val
	290					295					300				
Val	Ser	Gln	His	Asn	Leu	Thr	Gln	Ser	His	Ile	Ala	Glu	Thr	Glu	Lys
305					310					315					320
Tyr	Ala	His	Val	Thr	Phe	Phe	Ile	Asn	Gly	Gly	Val	Glu	Thr	Pro	Phe
			325						330					335	
Lys	Asn	Glu	Asn	Arg	Val	Leu	Ile	Gln	Ser	Pro	Lys	Val	Thr	Thr	Tyr
	340							345					350		
Asp	Leu	Lys	Pro	Glu	Met	Ser	Ala	Lys	Glu	Val	Thr	Leu	Ala	Val	Leu
	355						360					365			
Glu	Gln	Met	Lys	Leu	Gly	Thr	Asp	Leu	Ile	Ile	Val	Asn	Phe	Ala	Asn
	370					375					380				
Gly	Asp	Met	Val	Gly	His	Thr	Gly	Asn	Phe	Glu	Ala	Ser	Val	Lys	Ala
385				390					395						400
Val	Glu	Ala	Val	Asp	Ala	Cys	Leu	Gly	Glu	Ile	Leu	Ser	Leu	Ala	Lys
			405					410						415	
Lys	Leu	Asp	Tyr	Ala	Met	Leu	Leu	Thr	Ser	Asp	His	Gly	Asn	Cys	Glu
	420							425					430		
Arg	Met	Lys	Asp	Glu	Asn	Gln	Asn	Pro	Leu	Thr	Asn	His	Thr	Ala	Gly
	435						440					445			
Ser	Val	Tyr	Cys	Phe	Val	Leu	Gly	Asp	Gly	Val	Lys	Ser	Ile	Lys	Asn
	450					455					460				
Gly	Ala	Leu	Asn	Asn	Ile	Ala	Ser	Ser	Val	Leu	Lys	Leu	Met	Gly	Leu
465				470					475						480
Lys	Ala	Pro	Ala	Thr	Met	Asp	Glu	Pro	Leu	Phe					
			485					490							

<210> 107
 <211> 1440
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (72)...(1379)

<400> 107
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 gagtttttaa c atg aat ttt caa gaa aat tta gcc gct ttg gat ttg gag 110
 Met Asn Phe Gln Glu Asn Leu Ala Ala Leu Asp Leu Glu
 1 5 10

tat ctt tgg cac cct tgt tgc caa atg caa gag cat caa aat ttc ccc 158
 Tyr Leu Trp His Pro Cys Ser Gln Met Gln Glu His Gln Asn Phe Pro
 15 20 25

att atc ccc att aaa aag gct caa ggg att tac ctc tat gat ttt aat 206
 Ile Ile Pro Ile Lys Lys Ala Gln Gly Ile Tyr Leu Tyr Asp Phe Asn
 30 35 40 45

gat aac gct tac atg gat ttg atc agc tca tgg tgg gtg aat ctt ttt 254

Asp	Asn	Ala	Tyr	Met	Asp	Leu	Ile	Ser	Ser	Trp	Trp	Val	Asn	Leu	Phe		
				50					55					60			
ggg	cat	aat	aac	gcc	tac	atc	agc	cag	caa	ctc	aaa	aat	caa	att	gat	302	
Gly	His	Asn	Asn	Ala	Tyr	Ile	Ser	Gln	Gln	Leu	Lys	Asn	Gln	Ile	Asp		
			65					70					75				
gat	tta	gag	cat	gtc	ctt	ttg	gct	tct	ttt	agc	cat	aag	ccc	att	atc	350	
Asp	Leu	Glu	His	Val	Leu	Leu	Ala	Ser	Phe	Ser	His	Lys	Pro	Ile	Ile		
		80					85					90					
acg	ctc	tct	caa	agg	ctt	tgc	cag	ctc	act	cat	atg	gat	aaa	tgc	ttt	398	
Thr	Leu	Ser	Gln	Arg	Leu	Cys	Gln	Leu	Thr	His	Met	Asp	Lys	Cys	Phe		
	95					100					105						
tat	gcg	gat	aac	ggc	tca	tct	tgt	gtt	gaa	atc	gct	ttg	aaa	atg	agc	446	
Tyr	Ala	Asp	Asn	Gly	Ser	Ser	Cys	Val	Glu	Ile	Ala	Leu	Lys	Met	Ser		
110					115					120					125		
tat	cac	gcc	cat	ttt	tta	aag	aat	caa	acg	cgc	cgc	aaa	aag	ctt	ttt	494	
Tyr	His	Ala	His	Phe	Leu	Lys	Asn	Gln	Thr	Arg	Arg	Lys	Lys	Leu	Phe		
				130						135					140		
tta	tcg	ctc	tct	aat	tcc	tat	cat	ggc	gag	act	ttg	gga	gcg	tta	agc	542	
Leu	Ser	Leu	Ser	Asn	Ser	Tyr	His	Gly	Glu	Thr	Leu	Gly	Ala	Leu	Ser		
			145					150					155				
gtg	ggc	gat	gtg	aaa	ctt	tat	aaa	gac	act	tac	acc	cct	tta	ttg	ctc	590	
Val	Gly	Asp	Val	Lys	Leu	Tyr	Lys	Asp	Thr	Tyr	Thr	Pro	Leu	Leu	Leu		
	160						165					170					
aaa	aat	ctc	acc	aca	cct	gtg	cct	aaa	aac	gac	cat	gaa	ata	gaa	aat	638	
Lys	Asn	Leu	Thr	Thr	Pro	Val	Pro	Lys	Asn	Asp	His	Glu	Ile	Glu	Asn		
	175					180					185						
agt	ttg	aac	gct	tta	aag	cgt	ttg	tta	gac	aag	cat	agt	gaa	gaa	att	686	
Ser	Leu	Asn	Ala	Leu	Lys	Arg	Leu	Leu	Asp	Lys	His	Ser	Glu	Glu	Ile		
190					195					200					205		
tgc	gct	ttc	att	gca	gag	cct	ctt	ttg	caa	tgc	gca	ggg	aat	atg	cat	734	
Cys	Ala	Phe	Ile	Ala	Glu	Pro	Leu	Leu	Gln	Cys	Ala	Gly	Asn	Met	His		
				210					215					220			
att	tat	agc	gca	aga	tat	tta	aaa	caa	gcc	gtt	tta	ttg	tgc	aag	caa	782	
Ile	Tyr	Ser	Ala	Arg	Tyr	Leu	Lys	Gln	Ala	Val	Leu	Leu	Cys	Lys	Gln		
			225					230					235				
aaa	aac	atc	cac	att	att	ttt	gat	gaa	atc	gct	acc	ggg	ttt	ggg	cgc	830	
Lys	Asn	Ile	His	Ile	Ile	Phe	Asp	Glu	Ile	Ala	Thr	Gly	Phe	Gly	Arg		
	240						245					250					
aca	ggg	agc	atg	ttt	gct	tat	gaa	caa	tgc	gaa	att	aag	ccg	gat	ttt	878	
Thr	Gly	Ser	Met	Phe	Ala	Tyr	Glu	Gln	Cys	Glu	Ile	Lys	Pro	Asp	Phe		
	255					260					265						

tta tgc ttg tct aag ggg att agt ggg ggg tat ttg cct tta agc gca	926
Leu Cys Leu Ser Lys Gly Ile Ser Gly Gly Tyr Leu Pro Leu Ser Ala	
270 275 280 285	
cta tta acc cat aat gaa atc tat aac caa ttt tac gcc ccc tat gaa	974
Leu Leu Thr His Asn Glu Ile Tyr Asn Gln Phe Tyr Ala Pro Tyr Glu	
290 295 300	
gaa aat aaa gcg ttt ttg cat tcg cac agc tac aca gga aac gct ttg	1022
Glu Asn Lys Ala Phe Leu His Ser His Ser Tyr Thr Gly Asn Ala Leu	
305 310 315	
gca tgc gca tgc gcg aac gct acg ctg gat att ttt gaa aaa gaa aat	1070
Ala Cys Ala Cys Ala Asn Ala Thr Leu Asp Ile Phe Glu Lys Glu Asn	
320 325 330	
gtt att gaa aag aac aag gct tta agc ggg ttt att ttt aat acg ctc	1118
Val Ile Glu Lys Asn Lys Ala Leu Ser Gly Phe Ile Phe Asn Thr Leu	
335 340 345	
caa aac gca tta aaa ccc ttg atg gag caa caa gtg gtg tct gat tta	1166
Gln Asn Ala Leu Lys Pro Leu Met Glu Gln Gln Val Val Ser Asp Leu	
350 355 360 365	
agg cat ttg ggc atg gtc ttt gcc ttt gaa gtc ttt att caa acc aaa	1214
Arg His Leu Gly Met Val Phe Ala Phe Glu Val Phe Ile Gln Thr Lys	
370 375 380	
gag cgt ttg agt ttg gcg gtt ttt aaa aaa act cta aaa aaa ggc ctg	1262
Glu Arg Leu Ser Leu Ala Val Phe Lys Lys Thr Leu Lys Lys Gly Leu	
385 390 395	
tta tta cgc cct tta aac aac acc att tac ctc atg ccc cct tac att	1310
Leu Leu Arg Pro Leu Asn Asn Thr Ile Tyr Leu Met Pro Pro Tyr Ile	
400 405 410	
atc acg cat gaa gaa gtc aaa aag gcg gtt gcg ggg cta gtg gaa att	1358
Ile Thr His Glu Glu Val Lys Lys Ala Val Ala Gly Leu Val Glu Ile	
415 420 425	
ctt gat gag tta aga aaa ggc tgaaagcggtt tttaaaaata aaatagtaaa	1409
Leu Asp Glu Leu Arg Lys Gly	
430 435	
aagcttgaat tggatcaagc gatagctttt t	1440
<210> 108	
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<213> Helicobacter pylori	
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Met Asn Phe Gln Glu Asn Leu Ala Ala Leu Asp Leu Glu Tyr Leu Trp	
1 5 10 15	
His Pro Cys Ser Gln Met Gln Glu His Gln Asn Phe Pro Ile Ile Pro	

<210> 109
 <211> 360
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (82)...(294)

<400> 109
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 aaaagaaaaa aaggaaacaa c atg gga aaa atg aaa caa gaa aca gcg att 111
 Met Gly Lys Met Lys Gln Glu Thr Ala Ile
 1 5 10
 gac tat gaa aaa tta gcg aat cat tgg aat aat aat gat gaa aac agc 159
 Asp Tyr Glu Lys Leu Ala Asn His Trp Asn Asn Asn Asp Glu Asn Ser
 15 20 25
 gaa gca cta aac gct ttt gca gac gct tac ctt tat aaa cat gag aaa 207
 Glu Ala Leu Asn Ala Phe Ala Asp Ala Tyr Leu Tyr Lys His Glu Lys
 30 35 40
 aag agt caa aag att cgg gca ata gag ata agt tct cta aac aaa gcc 255
 Lys Ser Gln Lys Ile Arg Ala Ile Glu Ile Ser Ser Leu Asn Lys Ala
 45 50 55
 tgc atg gga gaa ttt tac cac aaa aac cca aaa tta ttt taataacgat 304
 Cys Met Gly Glu Phe Tyr His Lys Asn Pro Lys Leu Phe
 60 65 70
 cgctccaagg aaccaacgcc ccatgacctc aagaaaagag aatagcttga atcggt 360

<210> 110
 <211> 71
 <212> PRT
 <213> Helicobacter pylori

<400> 110
 Met Gly Lys Met Lys Gln Glu Thr Ala Ile Asp Tyr Glu Lys Leu Ala
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 Asn His Trp Asn Asn Asn Asp Glu Asn Ser Glu Ala Leu Asn Ala Phe
 20 25 30
 Ala Asp Ala Tyr Leu Tyr Lys His Glu Lys Lys Ser Gln Lys Ile Arg
 35 40 45
 Ala Ile Glu Ile Ser Ser Leu Asn Lys Ala Cys Met Gly Glu Phe Tyr
 50 55 60
 His Lys Asn Pro Lys Leu Phe
 65 70

<210> 111
 <211> 1300
 <212> DNA
 <213> Helicobacter pylori

<220>

<221> CDS

<222> (62)...(1255)

<400> 111

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ttgctaactc aaaaggcgaa ttgcaatatt ctaacacgcc taatatttat aaggcgatta 60
a aga cat aga aac aga gct aga tgc act aga aaa cag gct aga aac aat 109
  Arg His Arg Asn Arg Ala Arg Cys Thr Arg Lys Gln Ala Arg Asn Asn
    1           5           10           15

aag agt ttt agg cat gaa aac tat ttt tat aaa gtt ttg ggt agt gca 157
Lys Ser Phe Arg His Glu Asn Tyr Phe Tyr Lys Val Leu Gly Ser Ala
          20           25           30

act tct caa ata gaa agt ttg aaa aaa aga gaa aat gcc cta ttt gat 205
Thr Ser Gln Ile Glu Ser Leu Lys Lys Arg Glu Asn Ala Leu Phe Asp
          35           40           45

cat tta gat agt cta aaa agt tta tta gaa aaa aca cat tgg gaa aaa 253
His Leu Asp Ser Leu Lys Ser Leu Leu Glu Lys Thr His Trp Glu Lys
          50           55           60

gaa aaa ttc acg ccc cca ata aat gaa aaa gaa ctt aat agg caa ctt 301
Glu Lys Phe Thr Pro Pro Ile Asn Glu Lys Glu Leu Asn Arg Gln Leu
          65           70           75           80

aaa gaa gtg aga tgg ttc aat aaa gaa act cca act tct aaa aac act 349
Lys Glu Val Arg Trp Phe Asn Lys Glu Thr Pro Thr Ser Lys Asn Thr
          85           90           95

tat aag aaa att caa aaa tta gct gtt tat aaa agc cct tta ata aaa 397
Tyr Lys Lys Ile Gln Lys Leu Ala Val Tyr Lys Ser Pro Leu Ile Lys
          100          105          110

gat tat ctt tat acc att aaa aaa ctt ttt gcc aca caa aaa aag att 445
Asp Tyr Leu Tyr Thr Ile Lys Lys Leu Phe Ala Thr Gln Lys Lys Ile
          115          120          125

ata gat tta gaa aaa aat tat aaa gat tta aga gcc tta aag gaa gaa 493
Ile Asp Leu Glu Lys Asn Tyr Lys Asp Leu Arg Ala Leu Lys Glu Glu
          130          135          140

ttt agc aaa gat tta gaa act gat tta tcc cat tca aaa aaa cgc ttt 541
Phe Ser Lys Asp Leu Glu Thr Asp Leu Ser His Ser Lys Lys Arg Phe
          145          150          155          160

gaa ctt tac act aga cta aag agc atg agc aaa gtt ttt ata agc aaa 589
Glu Leu Tyr Thr Arg Leu Lys Ser Met Ser Lys Val Phe Ile Ser Lys
          165          170          175

agc att gtt aaa aat tta gaa aaa att gct tta gat ttt aaa agc gat 637
Ser Ile Val Lys Asn Leu Glu Lys Ile Ala Leu Asp Phe Lys Ser Asp
          180          185          190

aga cat agt att tcg caa aga gct ttt gaa ttt ttt aag tat atg aat 685
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Arg	His	Ser	Ile	Ser	Gln	Arg	Ala	Phe	Glu	Phe	Phe	Lys	Tyr	Met	Asn		
		195					200					205					
tat	caa	aat	tta	agc	ttg	act	gat	aaa	ggc	aat	atg	ttt	tta	gtg	gct	733	
Tyr	Gln	Asn	Leu	Ser	Leu	Thr	Asp	Lys	Gly	Asn	Met	Phe	Leu	Val	Ala		
	210					215					220						
aag	ttt	ttt	aaa	gat	agt	gct	tta	ctt	ggt	aat	att	gct	agg	ttt	gaa	781	
Lys	Phe	Phe	Lys	Asp	Ser	Ala	Leu	Leu	Val	Asn	Ile	Ala	Arg	Phe	Glu		
	225				230					235					240		
atg	aaa	aag	ata	gat	gat	agt	ggt	aaa	aat	tct	aac	cca	caa	gac	aat	829	
Met	Lys	Lys	Ile	Asp	Asp	Ser	Val	Lys	Asn	Ser	Asn	Pro	Gln	Asp	Asn		
			245						250					255			
tta	tta	gac	aaa	caa	ggt	tgg	ctc	aat	ctt	tta	gag	cat	tta	aaa	aga	877	
Leu	Leu	Asp	Lys	Gln	Val	Trp	Leu	Asn	Leu	Leu	Glu	His	Leu	Lys	Arg		
		260						265					270				
ctt	gaa	gag	gaa	aat	tat	tgt	ttt	gct	aag	aaa	cga	aaa	gaa	ttc	tta	925	
Leu	Glu	Glu	Glu	Asn	Tyr	Cys	Phe	Ala	Lys	Lys	Arg	Lys	Glu	Phe	Leu		
	275						280					285					
gag	act	aga	gcg	atg	gag	cta	tca	aaa	gat	tta	aaa	ttt	tta	aca	cag	973	
Glu	Thr	Arg	Ala	Met	Glu	Leu	Ser	Lys	Asp	Leu	Lys	Phe	Leu	Thr	Gln		
	290					295					300						
gct	aat	gaa	aat	gat	ttg	ccc	att	tat	gaa	aga	ggg	caa	agg	gat	aaa	1021	
Ala	Asn	Glu	Asn	Asp	Leu	Pro	Ile	Tyr	Glu	Arg	Gly	Gln	Arg	Asp	Lys		
	305				310					315					320		
atc	att	aaa	cgc	tgt	gaa	aaa	tcg	ctt	aac	ttt	ttg	cag	aaa	gaa	tta	1069	
Ile	Ile	Lys	Arg	Cys	Glu	Lys	Ser	Leu	Asn	Phe	Leu	Gln	Lys	Glu	Leu		
			325						330					335			
caa	tgc	ttt	aaa	acc	tta	ttg	aaa	agt	gca	agt	ata	gct	tta	gaa	aac	1117	
Gln	Cys	Phe	Lys	Thr	Leu	Leu	Lys	Ser	Ala	Ser	Ile	Ala	Leu	Glu	Asn		
			340					345					350				
ttg	caa	aat	aac	cat	caa	atc	aca	gcc	ggt	aca	caa	gac	acg	caa	gaa	1165	
Leu	Gln	Asn	Asn	His	Gln	Ile	Thr	Ala	Val	Thr	Gln	Asp	Thr	Gln	Glu		
		355				360						365					
aac	aca	aac	gcg	ctc	aaa	aat	act	act	caa	gat	ttt	aac	aaa	act	acc	1213	
Asn	Thr	Asn	Ala	Leu	Lys	Asn	Thr	Thr	Gln	Asp	Phe	Asn	Lys	Thr	Thr		
	370					375					380						
aat	gaa	cca	aca	aac	cct	aac	aat	aac	tat	gga	atg	gat	ttt			1255	
Asn	Glu	Pro	Thr	Asn	Pro	Asn	Asn	Asn	Tyr	Gly	Met	Asp	Phe				
	385				390					395							
taaaaccatc	cataaaatta	aataacttta	cttagcgtat	ttttt												1300	
<210>	112																
<211>	398																

<212> PRT

<213> Helicobacter pylori

<400> 112

Arg	His	Arg	Asn	Arg	Ala	Arg	Cys	Thr	Arg	Lys	Gln	Ala	Arg	Asn	Asn
1			5					10						15	
Lys	Ser	Phe	Arg	His	Glu	Asn	Tyr	Phe	Tyr	Lys	Val	Leu	Gly	Ser	Ala
		20					25					30			
Thr	Ser	Gln	Ile	Glu	Ser	Leu	Lys	Lys	Arg	Glu	Asn	Ala	Leu	Phe	Asp
	35					40					45				
His	Leu	Asp	Ser	Leu	Lys	Ser	Leu	Leu	Glu	Lys	Thr	His	Trp	Glu	Lys
50					55					60					
Glu	Lys	Phe	Thr	Pro	Pro	Ile	Asn	Glu	Lys	Glu	Leu	Asn	Arg	Gln	Leu
65				70				75						80	
Lys	Glu	Val	Arg	Trp	Phe	Asn	Lys	Glu	Thr	Pro	Thr	Ser	Lys	Asn	Thr
			85					90						95	
Tyr	Lys	Lys	Ile	Gln	Lys	Leu	Ala	Val	Tyr	Lys	Ser	Pro	Leu	Ile	Lys
	100						105						110		
Asp	Tyr	Leu	Tyr	Thr	Ile	Lys	Lys	Leu	Phe	Ala	Thr	Gln	Lys	Lys	Ile
	115					120						125			
Ile	Asp	Leu	Glu	Lys	Asn	Tyr	Lys	Asp	Leu	Arg	Ala	Leu	Lys	Glu	Glu
130					135					140					
Phe	Ser	Lys	Asp	Leu	Glu	Thr	Asp	Leu	Ser	His	Ser	Lys	Lys	Arg	Phe
145				150					155					160	
Glu	Leu	Tyr	Thr	Arg	Leu	Lys	Ser	Met	Ser	Lys	Val	Phe	Ile	Ser	Lys
			165					170						175	
Ser	Ile	Val	Lys	Asn	Leu	Glu	Lys	Ile	Ala	Leu	Asp	Phe	Lys	Ser	Asp
	180						185					190			
Arg	His	Ser	Ile	Ser	Gln	Arg	Ala	Phe	Glu	Phe	Phe	Lys	Tyr	Met	Asn
	195				200							205			
Tyr	Gln	Asn	Leu	Ser	Leu	Thr	Asp	Lys	Gly	Asn	Met	Phe	Leu	Val	Ala
210					215					220					
Lys	Phe	Phe	Lys	Asp	Ser	Ala	Leu	Leu	Val	Asn	Ile	Ala	Arg	Phe	Glu
225				230					235					240	
Met	Lys	Lys	Ile	Asp	Asp	Ser	Val	Lys	Asn	Ser	Asn	Pro	Gln	Asp	Asn
			245					250						255	
Leu	Leu	Asp	Lys	Gln	Val	Trp	Leu	Asn	Leu	Leu	Glu	His	Leu	Lys	Arg
		260					265					270			
Leu	Glu	Glu	Glu	Asn	Tyr	Cys	Phe	Ala	Lys	Lys	Arg	Lys	Glu	Phe	Leu
	275					280					285				
Glu	Thr	Arg	Ala	Met	Glu	Leu	Ser	Lys	Asp	Leu	Lys	Phe	Leu	Thr	Gln
290					295					300					
Ala	Asn	Glu	Asn	Asp	Leu	Pro	Ile	Tyr	Glu	Arg	Gly	Gln	Arg	Asp	Lys
305				310					315					320	
Ile	Ile	Lys	Arg	Cys	Glu	Lys	Ser	Leu	Asn	Phe	Leu	Gln	Lys	Glu	Leu
			325					330						335	
Gln	Cys	Phe	Lys	Thr	Leu	Leu	Lys	Ser	Ala	Ser	Ile	Ala	Leu	Glu	Asn
		340					345					350			
Leu	Gln	Asn	Asn	His	Gln	Ile	Thr	Ala	Val	Thr	Gln	Asp	Thr	Gln	Glu
	355					360					365				
Asn	Thr	Asn	Ala	Leu	Lys	Asn	Thr	Thr	Gln	Asp	Phe	Asn	Lys	Thr	Thr
370					375					380					
Asn	Glu	Pro	Thr	Asn	Pro	Asn	Asn	Asn	Tyr	Gly	Met	Asp	Phe		
385				390					395						

<210> 113
 <211> 630
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (105)...(518)

<400> 113
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 ctttcacataga aagtattttta acctcttttt gttataaatag gtct atg aaa aaa att 116
 Met Lys Lys Ile
 1

gat gat atg aga cac gga aga cat tgt gtt ttt tta atg cat gtg cat 164
 Asp Asp Met Arg His Gly Arg His Cys Val Phe Leu Met His Val His
 5 10 15 20

ttt gta ttt gtt act aaa tac agg cgt tca gca ttc aat aag gaa gtg 212
 Phe Val Phe Val Thr Lys Tyr Arg Arg Ser Ala Phe Asn Lys Glu Val
 25 30 35

ata gat ttt tta gga tcg gtg ttt gcc aaa gtg tgt aag gac ttt gag 260
 Ile Asp Phe Leu Gly Ser Val Phe Ala Lys Val Cys Lys Asp Phe Glu
 40 45 50

agc gaa ttg gta gaa ttt gat ggg gag agc gat cat gtg cat ttg ctt 308
 Ser Glu Leu Val Glu Phe Asp Gly Glu Ser Asp His Val His Leu Leu
 55 60 65

atc aac tac cct cca aaa gtg agc gtg agt aag tta gtt aat tct tta 356
 Ile Asn Tyr Pro Pro Lys Val Ser Val Ser Lys Leu Val Asn Ser Leu
 70 75 80

aaa ggc gtt agc agt cgt ttg act aga caa cac cat ttc aaa agc gtt 404
 Lys Gly Val Ser Ser Arg Leu Thr Arg Gln His His Phe Lys Ser Val
 85 90 95 100

gaa gct agt ttg tgg ggg aag cat tta tgg tcg cct agt tat ttc gct 452
 Glu Ala Ser Leu Trp Gly Lys His Leu Trp Ser Pro Ser Tyr Phe Ala
 105 110 115

ggg agt tgt ggg gac gcg cct tta gag atg att aag caa tac ata caa 500
 Gly Ser Cys Gly Asp Ala Pro Leu Glu Met Ile Lys Gln Tyr Ile Gln
 120 125 130

gat caa gaa aca ccg cat taaattagct aactttgatt ttttaagtaga 548
 Asp Gln Glu Thr Pro His
 135

acgcgctaaa aagcgaatgg atctaagtga aacaatgttc aaatagccta acggcctaaac 608
 gcttacatct ccgccctaaa gg 630

<210> 114

<211> 138
 <212> PRT
 <213> Helicobacter pylori

<400> 114
 Met Lys Lys Ile Asp Asp Met Arg His Gly Arg His Cys Val Phe Leu
 1 5 10 15
 Met His Val His Phe Val Phe Val Thr Lys Tyr Arg Arg Ser Ala Phe
 20 25 30
 Asn Lys Glu Val Ile Asp Phe Leu Gly Ser Val Phe Ala Lys Val Cys
 35 40 45
 Lys Asp Phe Glu Ser Glu Leu Val Glu Phe Asp Gly Glu Ser Asp His
 50 55 60
 Val His Leu Leu Ile Asn Tyr Pro Pro Lys Val Ser Val Ser Lys Leu
 65 70 75 80
 Val Asn Ser Leu Lys Gly Val Ser Ser Arg Leu Thr Arg Gln His His
 85 90 95
 Phe Lys Ser Val Glu Ala Ser Leu Trp Gly Lys His Leu Trp Ser Pro
 100 105 110
 Ser Tyr Phe Ala Gly Ser Cys Gly Asp Ala Pro Leu Glu Met Ile Lys
 115 120 125
 Gln Tyr Ile Gln Asp Gln Glu Thr Pro His
 130 135

<210> 115
 <211> 1080
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (101)...(1000)

<400> 115
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 caaccaccgt gtttttgaaa ccttaaaaga gccttataac atg caa ttt cat tca 115
 Met Gln Phe His Ser
 1 5
 tct agc gcg ttg att acg cct ttt aaa aaa gat ttg agc gtt gat gag 163
 Ser Ser Ala Leu Ile Thr Pro Phe Lys Lys Asp Leu Ser Val Asp Glu
 10 15 20
 gcc gct tat gaa acc ttg atc aag cgc caa att ttt cag ggc atg gac 211
 Ala Ala Tyr Glu Thr Leu Ile Lys Arg Gln Ile Phe Gln Gly Met Asp
 25 30 35
 gca tgc gtg cct gtt ggc acg aca gga gaa tcc gcc acg ctc acc cac 259
 Ala Cys Val Pro Val Gly Thr Thr Gly Glu Ser Ala Thr Leu Thr His
 40 45 50
 aaa gag cac atg cgt tgc att gaa atc gcc ata gaa act tgc aaa aac 307
 Lys Glu His Met Arg Cys Ile Glu Ile Ala Ile Glu Thr Cys Lys Asn
 55 60 65

act aaa acg ccc tca aat tcg cgc atg aaa gtg tta gcc ggc gtg ggc	355
Thr Lys Thr Pro Ser Asn Ser Arg Met Lys Val Leu Ala Gly Val Gly	
70 75 80 85	
agt aac gcc acg agc gag tcc ctt tct tta gca aag ttc gct caa aaa	403
Ser Asn Ala Thr Ser Glu Ser Leu Ser Leu Ala Lys Phe Ala Gln Lys	
90 95 100	
atc ggc gcg gat gcg att tta tgc gta agc cct tat tat aac cgc ccc	451
Ile Gly Ala Asp Ala Ile Leu Cys Val Ser Pro Tyr Tyr Asn Arg Pro	
105 110 115	
acc caa caa ggc ttg ttt gaa cat tat aaa acc atc gct caa tgc gtg	499
Thr Gln Gln Gly Leu Phe Glu His Tyr Lys Thr Ile Ala Gln Ser Val	
120 125 130	
gaa atc cct gtc atg ctt tat gat gtg cca agt aga aca ggc gtg tct	547
Glu Ile Pro Val Met Leu Tyr Asp Val Pro Ser Arg Thr Gly Val Ser	
135 140 145	
att gaa gtt cca acc gcc ctc aaa ctc ttt aga gaa gtc cct aac att	595
Ile Glu Val Pro Thr Ala Leu Lys Leu Phe Arg Glu Val Pro Asn Ile	
150 155 160 165	
aaa gcc att aaa gaa gcg tct ggc tct ttg aaa agg gta aca gaa ttg	643
Lys Ala Ile Lys Glu Ala Ser Gly Ser Leu Lys Arg Val Thr Glu Leu	
170 175 180	
cat tat tat gaa aaa gat ttt aaa att ttt agt ggg gaa gat tgc ctc	691
His Tyr Tyr Glu Lys Asp Phe Lys Ile Phe Ser Gly Glu Asp Ser Leu	
185 190 195	
aac cac tcc atc atg ttt tca ggg ggg tgc ggc gtg att tca gtg acc	739
Asn His Ser Ile Met Phe Ser Gly Gly Cys Gly Val Ile Ser Val Thr	
200 205 210	
ggg aat tta atg ccc aat ctg att tca caa atg gtc aat tgc gcg ctc	787
Gly Asn Leu Met Pro Asn Leu Ile Ser Gln Met Val Asn Cys Ala Leu	
215 220 225	
aaa caa aaa tac caa caa gcc cta gaa atc caa aat aag ctt ttt tgt	835
Lys Gln Lys Tyr Gln Gln Ala Leu Glu Ile Gln Asn Lys Leu Phe Cys	
230 235 240 245	
ttg cac caa gcc ctt ttt gta gaa aca aat ccc atc cct att aaa atg	883
Leu His Gln Ala Leu Phe Val Glu Thr Asn Pro Ile Pro Ile Lys Met	
250 255 260	
gct atg cat tta gcc ggc ttg att gaa aac cca agc tac aga ctg cct	931
Ala Met His Leu Ala Gly Leu Ile Glu Asn Pro Ser Tyr Arg Leu Pro	
265 270 275	
tta gtg gcc cca agc aaa gaa acg att caa ctt tta gaa aaa act tta	979
Leu Val Ala Pro Ser Lys Glu Thr Ile Gln Leu Leu Glu Lys Thr Leu	

280 285 290

caa caa tat gag gta att gca tgaatgggttc caatcacatg aaaaataaaa 1030
 Gln Gln Tyr Glu Val Ile Ala
 295 300

ccctagtgat cagcggcgcg actagagggga ttggcaaggc gatattgtac 1080

<210> 116
 <211> 300
 <212> PRT
 <213> Helicobacter pylori

<400> 116

Met	Gln	Phe	His	Ser	Ser	Ser	Ala	Leu	Ile	Thr	Pro	Phe	Lys	Lys	Asp
1				5				10					15		
Leu	Ser	Val	Asp	Glu	Ala	Ala	Tyr	Glu	Thr	Leu	Ile	Lys	Arg	Gln	Ile
			20					25					30		
Phe	Gln	Gly	Met	Asp	Ala	Cys	Val	Pro	Val	Gly	Thr	Thr	Gly	Glu	Ser
		35					40					45			
Ala	Thr	Leu	Thr	His	Lys	Glu	His	Met	Arg	Cys	Ile	Glu	Ile	Ala	Ile
	50					55					60				
Glu	Thr	Cys	Lys	Asn	Thr	Lys	Thr	Pro	Ser	Asn	Ser	Arg	Met	Lys	Val
65				70				75						80	
Leu	Ala	Gly	Val	Gly	Ser	Asn	Ala	Thr	Ser	Glu	Ser	Leu	Ser	Leu	Ala
			85					90					95		
Lys	Phe	Ala	Gln	Lys	Ile	Gly	Ala	Asp	Ala	Ile	Leu	Cys	Val	Ser	Pro
		100					105						110		
Tyr	Tyr	Asn	Arg	Pro	Thr	Gln	Gln	Gly	Leu	Phe	Glu	His	Tyr	Lys	Thr
		115				120						125			
Ile	Ala	Gln	Ser	Val	Glu	Ile	Pro	Val	Met	Leu	Tyr	Asp	Val	Pro	Ser
	130					135					140				
Arg	Thr	Gly	Val	Ser	Ile	Glu	Val	Pro	Thr	Ala	Leu	Lys	Leu	Phe	Arg
145				150				155						160	
Glu	Val	Pro	Asn	Ile	Lys	Ala	Ile	Lys	Glu	Ala	Ser	Gly	Ser	Leu	Lys
			165					170					175		
Arg	Val	Thr	Glu	Leu	His	Tyr	Tyr	Glu	Lys	Asp	Phe	Lys	Ile	Phe	Ser
		180						185					190		
Gly	Glu	Asp	Ser	Leu	Asn	His	Ser	Ile	Met	Phe	Ser	Gly	Gly	Cys	Gly
	195					200						205			
Val	Ile	Ser	Val	Thr	Gly	Asn	Leu	Met	Pro	Asn	Leu	Ile	Ser	Gln	Met
	210					215					220				
Val	Asn	Cys	Ala	Leu	Lys	Gln	Lys	Tyr	Gln	Gln	Ala	Leu	Glu	Ile	Gln
225				230				235						240	
Asn	Lys	Leu	Phe	Cys	Leu	His	Gln	Ala	Leu	Phe	Val	Glu	Thr	Asn	Pro
			245					250					255		
Ile	Pro	Ile	Lys	Met	Ala	Met	His	Leu	Ala	Gly	Leu	Ile	Glu	Asn	Pro
		260						265					270		
Ser	Tyr	Arg	Leu	Pro	Leu	Val	Ala	Pro	Ser	Lys	Glu	Thr	Ile	Gln	Leu
	275					280						285			
Leu	Glu	Lys	Thr	Leu	Gln	Gln	Tyr	Glu	Val	Ile	Ala				
	290					295					300				

<210> 117

<211> 1709
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (68)...(1624)

<400> 117
 aaaaaacctt aaaacgctta aaaaactatc gcttgatcaa gctctttttac tatttaatct 60
 ttaaaaa atg ctt ttg atc gtt ttt ttt aaa ttt tat ttt caa tat tca 109
 Met Leu Leu Ile Val Phe Phe Lys Phe Tyr Phe Gln Tyr Ser
 1 5 10
 att aaa aaa aaa tca ttt tat ttt att ttt gtt ata att caa gct att 157
 Ile Lys Lys Lys Ser Phe Tyr Phe Ile Phe Val Ile Ile Gln Ala Ile
 15 20 25 30
 ttt att ttc aat cta agg agg tgt cgc atg gac aat caa aag ata acg 205
 Phe Ile Phe Asn Leu Arg Arg Cys Arg Met Asp Asn Gln Lys Ile Thr
 35 40 45
 cat caa aat atc acg caa aaa caa ggc gag ctt aaa aga gac atg aaa 253
 His Gln Asn Ile Thr Gln Lys Gln Gly Glu Leu Lys Arg Asp Met Lys
 50 55 60
 atg cgc cat ctc tta atg att gca ttt gga gga gcg atc ggc aca ggg 301
 Met Arg His Leu Leu Met Ile Ala Phe Gly Gly Ala Ile Gly Thr Gly
 65 70 75
 ctt ttt gta ggc act ggg ggt aat att gcg agc gct ggc cct tta ggg 349
 Leu Phe Val Gly Thr Gly Gly Asn Ile Ala Ser Ala Gly Pro Leu Gly
 80 85 90
 acc ttg atc gct tat tgt ttt gga ggg ctt gtg gtc tat tgt atc atg 397
 Thr Leu Ile Ala Tyr Cys Phe Gly Gly Leu Val Val Tyr Cys Ile Met
 95 100 105 110
 ctc tct tta ggc gaa ttg gct agc gtt tat ccc act aca gga agt ttt 445
 Leu Ser Leu Gly Glu Leu Ala Ser Val Tyr Pro Thr Thr Gly Ser Phe
 115 120 125
 ggg gat tat gcg gct aaa ttc ata ggc cct ggc acg ggc tat atg gtt 493
 Gly Asp Tyr Ala Ala Lys Phe Ile Gly Pro Gly Thr Gly Tyr Met Val
 130 135 140
 ttt tgg atg tat tgg ctt ggc tgg gtg atc acg gtg gcg tta gaa tac 541
 Phe Trp Met Tyr Trp Leu Gly Trp Val Ile Thr Val Ala Leu Glu Tyr
 145 150 155
 atc gct ata ggc atg ctc atg caa cgc tgg ttt gcg gat att ccc atc 589
 Ile Ala Ile Gly Met Leu Met Gln Arg Trp Phe Ala Asp Ile Pro Ile
 160 165 170
 cat tat tgg gtt att tta tgc att gcg tta gtt ttt tta ttg aac ttt 637

His Tyr Trp Val Ile Leu Cys Ile Ala Leu Val Phe Leu Leu Asn Phe	
175 180 185 190	
ttt tct gtt aaa att ttt gcc gag ggc gag ttt ttc ttt agc ctg att	685
Phe Ser Val Lys Ile Phe Ala Glu Gly Glu Phe Phe Phe Ser Leu Ile	
195 200 205	
aaa gtt tta gcg gtg atc gct ttt ata ggc att ggc gcg att ggg att	733
Lys Val Leu Ala Val Ile Ala Phe Ile Gly Ile Gly Ala Ile Gly Ile	
210 215 220	
att tat caa atc tat tct cat ggg ttt ggt tct att ttt gat aat ttc	781
Ile Tyr Gln Ile Tyr Ser His Gly Phe Gly Ser Ile Phe Asp Asn Phe	
225 230 235	
cat ttt ggc gat aag ggg ttt ttc cct aat ggg agc gca gcg gtt ttt	829
His Phe Gly Asp Lys Gly Phe Phe Pro Asn Gly Ser Ala Ala Val Phe	
240 245 250	
agc gcg atg ctc gct gtt att ttt gct ttc act ggc aca gag gtg att	877
Ser Ala Met Leu Ala Val Ile Phe Ala Phe Thr Gly Thr Glu Val Ile	
255 260 265 270	
ggg gtg gct gtg gga gag act aaa aac gct agc gaa gtg atg ccc aaa	925
Gly Val Ala Val Gly Glu Thr Lys Asn Ala Ser Glu Val Met Pro Lys	
275 280 285	
gcg att aaa gcg acc ttg tgg cgg att gtc ttt ttc ttt tta ggc tct	973
Ala Ile Lys Ala Thr Leu Trp Arg Ile Val Phe Phe Phe Leu Gly Ser	
290 295 300	
gtg ttt gtc att tct gtt ttt tta ccc atg aat gat tct tct atc acg	1021
Val Phe Val Ile Ser Val Phe Leu Pro Met Asn Asp Ser Ser Ile Thr	
305 310 315	
caa agc cct ttt gtg agc gtt tta gaa cgc att aat ttg ccc ttt att	1069
Gln Ser Pro Phe Val Ser Val Leu Glu Arg Ile Asn Leu Pro Phe Ile	
320 325 330	
ggc atg ggt atc cct tat gtg gct gat ata atg aac gct gtt atc att	1117
Gly Met Gly Ile Pro Tyr Val Ala Asp Ile Met Asn Ala Val Ile Ile	
335 340 345 350	
acg gcg atg ttt tct acc gct aat tca ggg ctt tat gga gcg agc cgc	1165
Thr Ala Met Phe Ser Thr Ala Asn Ser Gly Leu Tyr Gly Ala Ser Arg	
355 360 365	
atg att tat ggg ctg tcc aaa caa aag atg ttt ttt aag gtt ttt tcc	1213
Met Ile Tyr Gly Leu Ser Lys Gln Lys Met Phe Phe Lys Val Phe Ser	
370 375 380	
caa ctc aac cga caa ggc acg ccc act tat gcg atg ttt ttt tcc ctt	1261
Gln Leu Asn Arg Gln Gly Thr Pro Thr Tyr Ala Met Phe Phe Ser Leu	
385 390 395	

tct ttt tct ctc ata ggg ctt tta gtc caa att tat gcc aaa gaa aat 1309
Ser Phe Ser Leu Ile Gly Leu Leu Val Gln Ile Tyr Ala Lys Glu Asn
400 405 410
gtc gtg gaa gct ttg att aat gtg atc agt ttc acg gtg att att gtg 1357
Val Val Glu Ala Leu Ile Asn Val Ile Ser Phe Thr Val Ile Ile Val
415 420 425 430
tgg gtt agc gtg tct gtt tcg caa tat tct ttc cgc aag caa tac tta 1405
Trp Val Ser Val Ser Val Ser Gln Tyr Ser Phe Arg Lys Gln Tyr Leu
435 440 445
aaa gcc ggg cat tct tta gag gat ttg cct tat aaa gcc ccc ttt cta 1453
Lys Ala Gly His Ser Leu Glu Asp Leu Pro Tyr Lys Ala Pro Phe Leu
450 455 460
ccc ttt ttg caa ctc ata ggg atc act ggg tgt gcc atc ggc gtg att 1501
Pro Phe Leu Gln Leu Ile Gly Ile Thr Gly Cys Ala Ile Gly Val Ile
465 470 475
ggg tgc gct atg gat aag gat caa cgc att ggg atg att tta acg att 1549
Gly Ser Ala Met Asp Lys Asp Gln Arg Ile Gly Met Ile Leu Thr Ile
480 485 490
gtt ttc gct gtt att tgt tac att gga tac tat ttt aca caa aaa gct 1597
Val Phe Ala Val Ile Cys Tyr Ile Gly Tyr Tyr Phe Thr Gln Lys Ala
495 500 505 510
aat gaa aat aac aaa aaa gat ttg ata taatcttttc ttaattttga 1644
Asn Glu Asn Asn Lys Lys Asp Leu Ile
515
agtttagcaa attttaagga agtaaccatg atgaaaaaaa cccttttttat ctcttttggt 1704
ttagc 1709

<210> 118
<211> 519
<212> PRT
<213> *Helicobacter pylori*

<400> 118
Met Leu Leu Ile Val Phe Phe Lys Phe Tyr Phe Gln Tyr Ser Ile Lys
1 5 10 15
Lys Lys Ser Phe Tyr Phe Ile Phe Val Ile Ile Gln Ala Ile Phe Ile
20 25 30
Phe Asn Leu Arg Arg Cys Arg Met Asp Asn Gln Lys Ile Thr His Gln
35 40 45
Asn Ile Thr Gln Lys Gln Gly Glu Leu Lys Arg Asp Met Lys Met Arg
50 55 60
His Leu Leu Met Ile Ala Phe Gly Gly Ala Ile Gly Thr Gly Leu Phe
65 70 75 80
Val Gly Thr Gly Gly Asn Ile Ala Ser Ala Gly Pro Leu Gly Thr Leu
85 90 95
Ile Ala Tyr Cys Phe Gly Gly Leu Val Val Tyr Cys Ile Met Leu Ser
100 105 110

<211> 1529
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (230)...(1390)

<400> 119
 ttaagcttga atgcgggcaa tatccaaatc cagagcatgc ccaaagttaa agagcgagtg 60
 agtgtcccct ctaaagacga tacggatcta ttcttaccac gattctatta aggactctat 120
 taaggcgggtg gtgaatatct ccactgaaaa gaagattaaa aacaatttta taggtggcgg 180
 tgtgtttaat gacccctttt tccaacaatt ttttggggat ttgggtggc atg att cct 238
 Met Ile Pro
 1

aaa gaa aga atg gaa agg gct tta ggc agc ggc gta atc att tct aaa 286
 Lys Glu Arg Met Glu Arg Ala Leu Gly Ser Gly Val Ile Ile Ser Lys
 5 10 15

gac ggc tat att gta act aat aac cat gtg att gat ggc gcg gat aag 334
 Asp Gly Tyr Ile Val Thr Asn Asn His Val Ile Asp Gly Ala Asp Lys
 20 25 30 35

att aaa gtt acc att cca ggg agc aat aaa gaa tat tcc gcc act cta 382
 Ile Lys Val Thr Ile Pro Gly Ser Asn Lys Glu Tyr Ser Ala Thr Leu
 40 45 50

gta ggc acc gat tct gaa agc gat tta gcg gtg att cgc atc act aaa 430
 Val Gly Thr Asp Ser Glu Ser Asp Leu Ala Val Ile Arg Ile Thr Lys
 55 60 65

gac aat ctg ccc acg atc aaa ttc tct gat tct aat gat att tca gtg 478
 Asp Asn Leu Pro Thr Ile Lys Phe Ser Asp Ser Asn Asp Ile Ser Val
 70 75 80

ggc gat ttg gtt ttt gcg att ggt aac cct ttt ggc gtg ggc gaa agc 526
 Gly Asp Leu Val Phe Ala Ile Gly Asn Pro Phe Gly Val Gly Glu Ser
 85 90 95

gtt acg caa ggc att gtt tca gcg ctc aat aaa agc ggg att ggg atc 574
 Val Thr Gln Gly Ile Val Ser Ala Leu Asn Lys Ser Gly Ile Gly Ile
 100 105 110 115

aac agc tat gag aat ttc att caa aca gac gct tcc atc aat cct gga 622
 Asn Ser Tyr Glu Asn Phe Ile Gln Thr Asp Ala Ser Ile Asn Pro Gly
 120 125 130

aat tcc ggc ggc gct tta att gat agc cgt gga ggg tta gtg ggg att 670
 Asn Ser Gly Gly Ala Leu Ile Asp Ser Arg Gly Gly Leu Val Gly Ile
 135 140 145

aat acc gct att atc tct aaa act ggg ggc aac cac ggc att ggc ttt 718
 Asn Thr Ala Ile Ile Ser Lys Thr Gly Gly Asn His Gly Ile Gly Phe
 150 155 160

gcc atc cct tct aac atg gtt aaa gat act gta acc caa ctc atc aaa	766
Ala Ile Pro Ser Asn Met Val Lys Asp Thr Val Thr Gln Leu Ile Lys	
165 170 175	
acc ggt aag att gaa aga ggt tac ttg ggc gtg ggc ttg caa gat ttg	814
Thr Gly Lys Ile Glu Arg Gly Tyr Leu Gly Val Gly Leu Gln Asp Leu	
180 185 190 195	
agt ggc gat ttg caa aat tct tat gac aac aaa gaa ggg gcg gta gtc	862
Ser Gly Asp Leu Gln Asn Ser Tyr Asp Asn Lys Glu Gly Ala Val Val	
200 205 210	
att agc gta gaa aaa gac tct ccg gct aaa aaa gca ggg att ttg gtg	910
Ile Ser Val Glu Lys Asp Ser Pro Ala Lys Lys Ala Gly Ile Leu Val	
215 220 225	
tgg gat ttg atc acc gaa gtc aat ggg aaa aag gtt aaa aac acg aat	958
Trp Asp Leu Ile Thr Glu Val Asn Gly Lys Lys Val Lys Asn Thr Asn	
230 235 240	
gag tta aga aat cta atc ggc tcc atg cta ccc aat caa aga gta acc	1006
Glu Leu Arg Asn Leu Ile Gly Ser Met Leu Pro Asn Gln Arg Val Thr	
245 250 255	
tta aaa gtc att aga gac aaa aaa gaa cgc gct ttc acc ctc act cta	1054
Leu Lys Val Ile Arg Asp Lys Lys Glu Arg Ala Phe Thr Leu Thr Leu	
260 265 270 275	
gct gaa agg aaa aac cct aac aaa aaa gaa acc att tct gct caa aac	1102
Ala Glu Arg Lys Asn Pro Asn Lys Lys Glu Thr Ile Ser Ala Gln Asn	
280 285 290	
ggc gcg caa ggc caa ttg aac ggg ctt caa gta gaa gat tta act caa	1150
Gly Ala Gln Gly Gln Leu Asn Gly Leu Gln Val Glu Asp Leu Thr Gln	
295 300 305	
gaa acc aaa agg tct atg cgt ttg agc gat gat gtt caa ggg gtt tta	1198
Glu Thr Lys Arg Ser Met Arg Leu Ser Asp Asp Val Gln Gly Val Leu	
310 315 320	
gtc tct caa gtg aat gaa aat tcc cca gca gag caa gcc gga ttt agg	1246
Val Ser Gln Val Asn Glu Asn Ser Pro Ala Glu Gln Ala Gly Phe Arg	
325 330 335	
caa ggt aac att atc aca aaa att gaa gag gtt gaa gtt aaa agc gtt	1294
Gln Gly Asn Ile Ile Thr Lys Ile Glu Glu Val Glu Val Lys Ser Val	
340 345 350 355	
gcg gat ttt aac cat gct tta gaa aag tat aaa ggc aaa ccc aaa cga	1342
Ala Asp Phe Asn His Ala Leu Glu Lys Tyr Lys Gly Lys Pro Lys Arg	
360 365 370	
ttc tta gtt tta gac ttg aat caa ggt tat agg atc att ttg gtg aaa	1390
Phe Leu Val Leu Asp Leu Asn Gln Gly Tyr Arg Ile Ile Leu Val Lys	

375

380

385

tgataggggt gggtcgtag tcgcatgtct ttgattagag tgaatgggga agctttttaa 1450
 ctctcttttag aaagtttaga agaagaccct tttgaaacta aagaaacgct agaaacgctt 1510
 atcaaacaaa cgagcgtag 1529

<210> 120

<211> 387

<212> PRT

<213> *Helicobacter pylori*

<400> 120

Met	Ile	Pro	Lys	Glu	Arg	Met	Glu	Arg	Ala	Leu	Gly	Ser	Gly	Val	Ile
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Ile	Ser	Lys	Asp	Gly	Tyr	Ile	Val	Thr	Asn	Asn	His	Val	Ile	Asp	Gly
			20					25					30		
Ala	Asp	Lys	Ile	Lys	Val	Thr	Ile	Pro	Gly	Ser	Asn	Lys	Glu	Tyr	Ser
		35				40					45				
Ala	Thr	Leu	Val	Gly	Thr	Asp	Ser	Glu	Ser	Asp	Leu	Ala	Val	Ile	Arg
	50				55					60					
Ile	Thr	Lys	Asp	Asn	Leu	Pro	Thr	Ile	Lys	Phe	Ser	Asp	Ser	Asn	Asp
65				70					75					80	
Ile	Ser	Val	Gly	Asp	Leu	Val	Phe	Ala	Ile	Gly	Asn	Pro	Phe	Gly	Val
			85					90						95	
Gly	Glu	Ser	Val	Thr	Gln	Gly	Ile	Val	Ser	Ala	Leu	Asn	Lys	Ser	Gly
		100					105						110		
Ile	Gly	Ile	Asn	Ser	Tyr	Glu	Asn	Phe	Ile	Gln	Thr	Asp	Ala	Ser	Ile
	115					120						125			
Asn	Pro	Gly	Asn	Ser	Gly	Gly	Ala	Leu	Ile	Asp	Ser	Arg	Gly	Gly	Leu
	130				135					140					
Val	Gly	Ile	Asn	Thr	Ala	Ile	Ile	Ser	Lys	Thr	Gly	Gly	Asn	His	Gly
145				150					155					160	
Ile	Gly	Phe	Ala	Ile	Pro	Ser	Asn	Met	Val	Lys	Asp	Thr	Val	Thr	Gln
			165					170						175	
Leu	Ile	Lys	Thr	Gly	Lys	Ile	Glu	Arg	Gly	Tyr	Leu	Gly	Val	Gly	Leu
		180					185						190		
Gln	Asp	Leu	Ser	Gly	Asp	Leu	Gln	Asn	Ser	Tyr	Asp	Asn	Lys	Glu	Gly
	195					200					205				
Ala	Val	Val	Ile	Ser	Val	Glu	Lys	Asp	Ser	Pro	Ala	Lys	Lys	Ala	Gly
	210				215					220					
Ile	Leu	Val	Trp	Asp	Leu	Ile	Thr	Glu	Val	Asn	Gly	Lys	Lys	Val	Lys
225			230					235						240	
Asn	Thr	Asn	Glu	Leu	Arg	Asn	Leu	Ile	Gly	Ser	Met	Leu	Pro	Asn	Gln
			245					250						255	
Arg	Val	Thr	Leu	Lys	Val	Ile	Arg	Asp	Lys	Lys	Glu	Arg	Ala	Phe	Thr
		260					265						270		
Leu	Thr	Leu	Ala	Glu	Arg	Lys	Asn	Pro	Asn	Lys	Lys	Glu	Thr	Ile	Ser
	275					280						285			
Ala	Gln	Asn	Gly	Ala	Gln	Gly	Gln	Leu	Asn	Gly	Leu	Gln	Val	Glu	Asp
	290				295					300					
Leu	Thr	Gln	Glu	Thr	Lys	Arg	Ser	Met	Arg	Leu	Ser	Asp	Asp	Val	Gln
305				310					315					320	
Gly	Val	Leu	Val	Ser	Gln	Val	Asn	Glu	Asn	Ser	Pro	Ala	Glu	Gln	Ala
			325					330					335		
Gly	Phe	Arg	Gln	Gly	Asn	Ile	Ile	Thr	Lys	Ile	Glu	Glu	Val	Glu	Val

gtc tct gtt tta gac acc ctt tta ggc aat aaa aaa caa gtg agc atc 488
 Val Ser Val Leu Asp Thr Leu Leu Gly Asn Lys Lys Gln Val Ser Ile
 135 140 145 150

aat aat gag act ttt agc ctt aaa atc cct att ggc gtg gaa gag ggc 536
 Asn Asn Glu Thr Phe Ser Leu Lys Ile Pro Ile Gly Val Glu Glu Gly
 155 160 165

gaa aag att agg gtt cgc aac aag ggg aaa acg ggg cga acg act agg 584
 Glu Lys Ile Arg Val Arg Asn Lys Gly Lys Thr Gly Arg Thr Thr Arg
 170 175 180

ggc gat ttg ctc tta gag atc cat att gaa gaa gat gaa atg tat agg 632
 Gly Asp Leu Leu Leu Glu Ile His Ile Glu Glu Asp Glu Met Tyr Arg
 185 190 195

cgc gag aaa gat gat att acc caa atc ttt gat tta ccc tta aaa acg 680
 Arg Glu Lys Asp Asp Ile Thr Gln Ile Phe Asp Leu Pro Leu Lys Thr
 200 205 210

gct ctt ttt gga ggg aaa att gaa atc gct act tgg cat aaa acc tta 728
 Ala Leu Phe Gly Gly Lys Ile Glu Ile Ala Thr Trp His Lys Thr Leu
 215 220 225 230

acc cta acc att ccc cct aac acc aaa gcg atg caa aaa ttc cgc att 776
 Thr Leu Thr Ile Pro Pro Asn Thr Lys Ala Met Gln Lys Phe Arg Ile
 235 240 245

aaa gaa aaa ggg atc aaa aac aga aaa act tcg cat gtg ggg gat ttg 824
 Lys Glu Lys Gly Ile Lys Asn Arg Lys Thr Ser His Val Gly Asp Leu
 250 255 260

tat ttg cag gct cgt ttg att ttg cct aaa act gaa acg ctt tct aat 872
 Tyr Leu Gln Ala Arg Leu Ile Leu Pro Lys Thr Glu Thr Leu Ser Asn
 265 270 275

gag ttg aaa gcg tta tta gaa aaa gaa ttg taaggaggaa tcgtgtgcga 922
 Glu Leu Lys Ala Leu Leu Glu Lys Glu Leu
 280 285

ttatgatgaa ccgctttatt taatcagcgt cgtggctaaa atcttaggcg tgcaccctca 982
 aaccttgc 990

<210> 122

<211> 288

<212> PRT

<213> *Helicobacter pylori*

<400> 122

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 Gln Asp Glu Ile Lys Lys Ser Tyr Arg Arg Leu Ala Arg Gln Tyr His
 20 25 30
 Pro Asp Leu Asn Lys Thr Lys Glu Ala Glu Glu Lys Phe Lys Glu Ile
 35 40 45

Asn	Ala	Ala	Tyr	Glu	Ile	Leu	Ser	Asp	Glu	Glu	Lys	Arg	Arg	Gln	Tyr
50						55					60				
Asp	Gln	Phe	Gly	Asp	Asn	Met	Phe	Gly	Gly	Gln	Asn	Phe	Ser	Asp	Phe
65					70					75					80
Ala	Arg	Ser	Arg	Gly	Pro	Ser	Glu	Asp	Leu	Asp	Asp	Ile	Leu	Ser	Ser
				85					90					95	
Ile	Phe	Gly	Lys	Gly	Gly	Phe	Ser	Gln	Arg	Phe	Ser	Gln	Asn	Ser	Gln
			100					105					110		
Gly	Phe	Ser	Gly	Phe	Asn	Phe	Ser	Asn	Phe	Ala	Pro	Glu	Asn	Leu	Asp
		115					120					125			
Ile	Thr	Ala	Ala	Leu	Asn	Val	Ser	Val	Leu	Asp	Thr	Leu	Leu	Gly	Asn
	130					135					140				
Lys	Lys	Gln	Val	Ser	Ile	Asn	Asn	Glu	Thr	Phe	Ser	Leu	Lys	Ile	Pro
145					150					155					160
Ile	Gly	Val	Glu	Glu	Gly	Glu	Lys	Ile	Arg	Val	Arg	Asn	Lys	Gly	Lys
			165						170					175	
Thr	Gly	Arg	Thr	Thr	Arg	Gly	Asp	Leu	Leu	Leu	Glu	Ile	His	Ile	Glu
			180					185					190		
Glu	Asp	Glu	Met	Tyr	Arg	Arg	Glu	Lys	Asp	Asp	Ile	Thr	Gln	Ile	Phe
	195						200					205			
Asp	Leu	Pro	Leu	Lys	Thr	Ala	Leu	Phe	Gly	Gly	Lys	Ile	Glu	Ile	Ala
	210					215					220				
Thr	Trp	His	Lys	Thr	Leu	Thr	Leu	Thr	Ile	Pro	Pro	Asn	Thr	Lys	Ala
225					230					235					240
Met	Gln	Lys	Phe	Arg	Ile	Lys	Glu	Lys	Gly	Ile	Lys	Asn	Arg	Lys	Thr
			245						250					255	
Ser	His	Val	Gly	Asp	Leu	Tyr	Leu	Gln	Ala	Arg	Leu	Ile	Leu	Pro	Lys
		260					265					270			
Thr	Glu	Thr	Leu	Ser	Asn	Glu	Leu	Lys	Ala	Leu	Leu	Glu	Lys	Glu	Leu
	275						280					285			

<210> 123
 <211> 1350
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (113)...(1285)

<400> 123
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 cgaaaaattt aaacaccctt acgaattttt acgaattgat tttattttaa aa atg agc 118
 Met Ser
 1

ctg	act	tcg	ctt	tta	aac	cca	aaa	agc	cta	gaa	gat	ttt	tta	ggc	caa	166
Leu	Thr	Ser	Leu	Leu	Asn	Pro	Lys	Ser	Leu	Glu	Asp	Phe	Leu	Gly	Gln	
		5					10					15				
gag	cat	tta	gta	ggg	aaa	gac	gcc	ccc	tta	ttt	aaa	gcc	cta	caa	tcc	214
Glu	His	Leu	Val	Gly	Lys	Asp	Ala	Pro	Leu	Phe	Lys	Ala	Leu	Gln	Ser	
	20					25					30					

aaa cac ttc ccc cat gcc ttt ttc tat ggc cct cct ggc gtg ggt aaa	262
Lys His Phe Pro His Ala Phe Phe Tyr Gly Pro Pro Gly Val Gly Lys	
35 40 45 50	
aca agc ctg gct caa atc atc gcc tat atg cta gag cgc ccc att ctt	310
Thr Ser Leu Ala Gln Ile Ile Ala Tyr Met Leu Glu Arg Pro Ile Leu	
55 60 65	
tta ttc aat gcg acg gat ttt aaa tta gag gat ttg cgc ctt aag ctt	358
Leu Phe Asn Ala Thr Asp Phe Lys Leu Glu Asp Leu Arg Leu Lys Leu	
70 75 80	
aaa aat tac caa aat acc ctt tta aaa ccc gtt gtt ttt att gat gaa	406
Lys Asn Tyr Gln Asn Thr Leu Leu Lys Pro Val Val Phe Ile Asp Glu	
85 90 95	
acc cac aga ttg aat aaa acc caa caa gaa ttt tta ctc ccc att atg	454
Thr His Arg Leu Asn Lys Thr Gln Gln Glu Phe Leu Leu Pro Ile Met	
100 105 110	
gaa aaa gat cac gct tta att tta ggg gct agc acg caa gat cct aat	502
Glu Lys Asp His Ala Leu Ile Leu Gly Ala Ser Thr Gln Asp Pro Asn	
115 120 125 130	
tac agc cta agc cat gcg atc cga tca aga agt ttt att ttt gaa tta	550
Tyr Ser Leu Ser His Ala Ile Arg Ser Arg Ser Phe Ile Phe Glu Leu	
135 140 145	
acc ccc cta aac aag agc gat tta gac agg ctt tgc gct aaa gct tta	598
Thr Pro Leu Asn Lys Ser Asp Leu Asp Arg Leu Cys Ala Lys Ala Leu	
150 155 160	
aca ttg ctc aaa aaa caa ata gag cct ggc gct aaa acc tat ctt tta	646
Thr Leu Leu Lys Lys Gln Ile Glu Pro Gly Ala Lys Thr Tyr Leu Leu	
165 170 175	
aac aac agc gct ggc gac gct aga gcg tta tta aac ctt tta gat ttg	694
Asn Asn Ser Ala Gly Asp Ala Arg Ala Leu Leu Asn Leu Leu Asp Leu	
180 185 190	
agc gct aaa ata gaa gat cct atc act tta aaa acg cta caa tcc tta	742
Ser Ala Lys Ile Glu Asp Pro Ile Thr Leu Lys Thr Leu Gln Ser Leu	
195 200 205 210	
cgg cct cat agc cta aat gat gga tct tat agc gat gat acg cat tat	790
Arg Pro His Ser Leu Asn Asp Gly Ser Tyr Ser Asp Asp Thr His Tyr	
215 220 225	
aac ctt act agc gcg tta atc aaa tct tta aga ggg agc gat gaa aac	838
Asn Leu Thr Ser Ala Leu Ile Lys Ser Leu Arg Gly Ser Asp Glu Asn	
230 235 240	
gct tcc atc tat tat ctg gcg cgc ttg att gct ggc ggg gaa aac ccg	886
Ala Ser Ile Tyr Tyr Leu Ala Arg Leu Ile Ala Gly Gly Glu Asn Pro	
245 250 255	

gaa ttt atc gcc aga agg ctg gtg att ttt gcg agc gaa gat att ggt 934
 Glu Phe Ile Ala Arg Arg Leu Val Ile Phe Ala Ser Glu Asp Ile Gly
 260 265 270

aac gct aac ccg aac gcc ctt aat tta gcc gct tct tgt ttg ttt gca 982
 Asn Ala Asn Pro Asn Ala Leu Asn Leu Ala Ala Ser Cys Leu Phe Ala
 275 280 285 290

gtc aaa caa atc ggc tac cct gaa gcg cgc atc att tta agc caa tgc 1030
 Val Lys Gln Ile Gly Tyr Pro Glu Ala Arg Ile Ile Leu Ser Gln Cys
 295 300 305

gtg att tat ctg gct tgt tcg ccc aag tct aac acg gct tat aga gcg 1078
 Val Ile Tyr Leu Ala Cys Ser Pro Lys Ser Asn Thr Ala Tyr Arg Ala
 310 315 320

atc aat cag gct ttg gat tgc gtt caa aaa ggc tca ctc tac cct att 1126
 Ile Asn Gln Ala Leu Asp Cys Val Gln Lys Gly Ser Leu Tyr Pro Ile
 325 330 335

cct aaa cac ctg ctg cct aac gct aaa gat tac ctt tac ccg cat gat 1174
 Pro Lys His Leu Leu Pro Asn Ala Lys Asp Tyr Leu Tyr Pro His Asp
 340 345 350

tat aac ggc tat gtc aaa caa gat tat ttg gaa aaa ccc cta gat ttg 1222
 Tyr Asn Gly Tyr Val Lys Gln Asp Tyr Leu Glu Lys Pro Leu Asp Leu
 355 360 365 370

gtt tct tct caa ggc ata gga ttt gaa aaa acc ctt tta gaa tgg ctt 1270
 Val Ser Ser Gln Gly Ile Gly Phe Glu Lys Thr Leu Leu Glu Trp Leu
 375 380 385

gat aag ata aga aat tgatcttata agttacatta aaatgcgaca atggtaataa 1325
 Asp Lys Ile Arg Asn
 390

aaaatcaata tttttggatt gaatt 1350

<210> 124
 <211> 391
 <212> PRT
 <213> Helicobacter pylori

<400> 124
 Met Ser Leu Thr Ser Leu Leu Asn Pro Lys Ser Leu Glu Asp Phe Leu
 1 5 10 15
 Gly Gln Glu His Leu Val Gly Lys Asp Ala Pro Leu Phe Lys Ala Leu
 20 25 30
 Gln Ser Lys His Phe Pro His Ala Phe Phe Tyr Gly Pro Pro Gly Val
 35 40 45
 Gly Lys Thr Ser Leu Ala Gln Ile Ile Ala Tyr Met Leu Glu Arg Pro
 50 55 60
 Ile Leu Leu Phe Asn Ala Thr Asp Phe Lys Leu Glu Asp Leu Arg Leu
 65 70 75 80

Lys Leu Lys Asn Tyr Gln Asn Thr Leu Leu Lys Pro Val Val Phe Ile
 85 90 95
 Asp Glu Thr His Arg Leu Asn Lys Thr Gln Gln Glu Phe Leu Leu Pro
 100 105 110
 Ile Met Glu Lys Asp His Ala Leu Ile Leu Gly Ala Ser Thr Gln Asp
 115 120 125
 Pro Asn Tyr Ser Leu Ser His Ala Ile Arg Ser Arg Ser Phe Ile Phe
 130 135 140
 Glu Leu Thr Pro Leu Asn Lys Ser Asp Leu Asp Arg Leu Cys Ala Lys
 145 150 155 160
 Ala Leu Thr Leu Leu Lys Lys Gln Ile Glu Pro Gly Ala Lys Thr Tyr
 165 170 175
 Leu Leu Asn Asn Ser Ala Gly Asp Ala Arg Ala Leu Leu Asn Leu Leu
 180 185 190
 Asp Leu Ser Ala Lys Ile Glu Asp Pro Ile Thr Leu Lys Thr Leu Gln
 195 200 205
 Ser Leu Arg Pro His Ser Leu Asn Asp Gly Ser Tyr Ser Asp Asp Thr
 210 215 220
 His Tyr Asn Leu Thr Ser Ala Leu Ile Lys Ser Leu Arg Gly Ser Asp
 225 230 235 240
 Glu Asn Ala Ser Ile Tyr Tyr Leu Ala Arg Leu Ile Ala Gly Gly Glu
 245 250 255
 Asn Pro Glu Phe Ile Ala Arg Arg Leu Val Ile Phe Ala Ser Glu Asp
 260 265 270
 Ile Gly Asn Ala Asn Pro Asn Ala Leu Asn Leu Ala Ala Ser Cys Leu
 275 280 285
 Phe Ala Val Lys Gln Ile Gly Tyr Pro Glu Ala Arg Ile Ile Leu Ser
 290 295 300
 Gln Cys Val Ile Tyr Leu Ala Cys Ser Pro Lys Ser Asn Thr Ala Tyr
 305 310 315 320
 Arg Ala Ile Asn Gln Ala Leu Asp Cys Val Gln Lys Gly Ser Leu Tyr
 325 330 335
 Pro Ile Pro Lys His Leu Leu Pro Asn Ala Lys Asp Tyr Leu Tyr Pro
 340 345 350
 His Asp Tyr Asn Gly Tyr Val Lys Gln Asp Tyr Leu Glu Lys Pro Leu
 355 360 365
 Asp Leu Val Ser Ser Gln Gly Ile Gly Phe Glu Lys Thr Leu Leu Glu
 370 375 380
 Trp Leu Asp Lys Ile Arg Asn
 385 390

<210> 125

<211> 869

<212> DNA

<213> *Helicobacter pylori*

<220>

<221> CDS

<222> (76)...(759)

<400> 125

aagaaacttt taacaaacaa ttcaagggat ttggcgattt tgggtcttaa aaaatatgct 60
 attttatggt cttta atg ggg ttt tat gca gga ttg aac gcg ctt gat tat 111
 Met Gly Phe Tyr Ala Gly Leu Asn Ala Leu Asp Tyr

	1	5	10	
gac acc ata gac cca aaa tac tac aag tat atc aag tat tat aaa gcc				159
Asp Thr Ile Asp Pro Lys Tyr Tyr Lys Tyr Ile Lys Tyr Tyr Lys Ala				
	15	20	25	
tat gag gat aaa gaa gtt gaa gaa ttg atc aga gac tta aaa agg gcg				207
Tyr Glu Asp Lys Glu Val Glu Glu Leu Ile Arg Asp Leu Lys Arg Ala				
	30	35	40	
aac gct aaa agc ggg ctt att tta ggg atc aat acc ggg ttt ttt tac				255
Asn Ala Lys Ser Gly Leu Ile Leu Gly Ile Asn Thr Gly Phe Phe Tyr				
	45	50	55	60
aat cat gaa atc atg gtt aga act aat agc tct agc atc acg ggg aat				303
Asn His Glu Ile Met Val Arg Thr Asn Ser Ser Ser Ile Thr Gly Asn				
	65	70	75	
att tta aat tat ttg ttc gct tac ggc ttg cgt ttt ggc tat caa act				351
Ile Leu Asn Tyr Leu Phe Ala Tyr Gly Leu Arg Phe Gly Tyr Gln Thr				
	80	85	90	
ttc agg ccg tcg ttt ttt gcg cgc ttg gtc aag cca aat atc att ggc				399
Phe Arg Pro Ser Phe Phe Ala Arg Leu Val Lys Pro Asn Ile Ile Gly				
	95	100	105	
agg cgc att tat atc caa tat tat gga gga gct cct aaa aaa gcg ggc				447
Arg Arg Ile Tyr Ile Gln Tyr Tyr Gly Gly Ala Pro Lys Lys Ala Gly				
	110	115	120	
ttt ggg gat gta ggg ttt caa tcg gtt atg ctg aat ggg gat ttt tta				495
Phe Gly Asp Val Gly Phe Gln Ser Val Met Leu Asn Gly Asp Phe Leu				
	125	130	135	140
ttg gat ttt cct ttg cct ttt gtg ggg aaa tac ctt tat atg ggg ggt				543
Leu Asp Phe Pro Leu Pro Phe Val Gly Lys Tyr Leu Tyr Met Gly Gly				
	145	150	155	
tat atg ggt tta ggt ttg ggg gtt gta gcg cat ggg gtg aat tac acg				591
Tyr Met Gly Leu Gly Leu Gly Val Val Ala His Gly Val Asn Tyr Thr				
	160	165	170	
gcg gaa tgg ggg atg tct ttt aac gca gga ttg gct cta acg gta tta				639
Ala Glu Trp Gly Met Ser Phe Asn Ala Gly Leu Ala Leu Thr Val Leu				
	175	180	185	
gaa aaa aac cgc att gaa ttt gga ttt aaa att ttg aat aat ttc cct				687
Glu Lys Asn Arg Ile Glu Phe Gly Phe Lys Ile Leu Asn Asn Phe Pro				
	190	195	200	
ttt ttg caa tct aat tct tca aaa gag act tgg tgg gga gct atg gca				735
Phe Leu Gln Ser Asn Ser Ser Lys Glu Thr Trp Trp Gly Ala Met Ala				
	205	210	215	220
aac att ggg tat caa tat gtg ttc taaaaaata agaaatctca ttttatgctt				789

Asn Ile Gly Tyr Gln Tyr Val Phe
225

tggttttatg ttgggcttgc acgctgaaga aaatacgact gaaggaaata tgactgaaga 849
aaatatctct aaagacgctc 869

<210> 126
<211> 228
<212> PRT
<213> Helicobacter pylori

<400> 126
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Pro Lys Tyr Tyr Lys Tyr Ile Lys Tyr Tyr Lys Ala Tyr Glu Asp Lys
20 25 30
Glu Val Glu Glu Leu Ile Arg Asp Leu Lys Arg Ala Asn Ala Lys Ser
35 40 45
Gly Leu Ile Leu Gly Ile Asn Thr Gly Phe Phe Tyr Asn His Glu Ile
50 55 60
Met Val Arg Thr Asn Ser Ser Ser Ile Thr Gly Asn Ile Leu Asn Tyr
65 70 75 80
Leu Phe Ala Tyr Gly Leu Arg Phe Gly Tyr Gln Thr Phe Arg Pro Ser
85 90 95
Phe Phe Ala Arg Leu Val Lys Pro Asn Ile Ile Gly Arg Arg Ile Tyr
100 105 110
Ile Gln Tyr Tyr Gly Gly Ala Pro Lys Lys Ala Gly Phe Gly Asp Val
115 120 125
Gly Phe Gln Ser Val Met Leu Asn Gly Asp Phe Leu Leu Asp Phe Pro
130 135 140
Leu Pro Phe Val Gly Lys Tyr Leu Tyr Met Gly Gly Tyr Met Gly Leu
145 150 155 160
Gly Leu Gly Val Val Ala His Gly Val Asn Tyr Thr Ala Glu Trp Gly
165 170 175
Met Ser Phe Asn Ala Gly Leu Ala Leu Thr Val Leu Glu Lys Asn Arg
180 185 190
Ile Glu Phe Gly Phe Lys Ile Leu Asn Asn Phe Pro Phe Leu Gln Ser
195 200 205
Asn Ser Ser Lys Glu Thr Trp Trp Gly Ala Met Ala Asn Ile Gly Tyr
210 215 220
Gln Tyr Val Phe
225

<210> 127
<211> 1171
<212> DNA
<213> Helicobacter pylori

<220>
<221> CDS
<222> (89)...(1096)

<400> 127
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tcctaacga attagaaagt tatcatta atg aaa gaa cgg ata gtc aat tta	112
Met Lys Glu Arg Ile Val Asn Leu	
1 5	
gaa act ttg gat ttt gaa att tct caa gaa gtg agt ttg cgc cct agt	160
Glu Thr Leu Asp Phe Glu Ile Ser Gln Glu Val Ser Leu Arg Pro Ser	
10 15 20	
ctt tgg gaa gat ttt atc ggt caa gaa aag att aaa agc aat ttg caa	208
Leu Trp Glu Asp Phe Ile Gly Gln Glu Lys Ile Lys Ser Asn Leu Gln	
25 30 35 40	
att tct att tgc gcg gct aaa aaa cgc caa gaa agt ttg gat cac atg	256
Ile Ser Ile Cys Ala Ala Lys Lys Arg Gln Glu Ser Leu Asp His Met	
45 50 55	
ctt ttt ttt ggc ccg ccc ggt ttg ggt aaa act tca atc agc cat atc	304
Leu Phe Phe Gly Pro Pro Gly Leu Gly Lys Thr Ser Ile Ser His Ile	
60 65 70	
atc gct aaa gaa atg gaa acc aat atc aag atc acc gcc gct ccc atg	352
Ile Ala Lys Glu Met Glu Thr Asn Ile Lys Ile Thr Ala Ala Pro Met	
75 80 85	
ata gaa aaa agc ggt gat tta gcc gcc att ttg acc aat ttg caa gct	400
Ile Glu Lys Ser Gly Asp Leu Ala Ala Ile Leu Thr Asn Leu Gln Ala	
90 95 100	
aaa gac att ctt ttt att gat gaa atc cac cgg ctc agc cca gcg att	448
Lys Asp Ile Leu Phe Ile Asp Glu Ile His Arg Leu Ser Pro Ala Ile	
105 110 115 120	
gaa gag gtt tta tac ccg gcg atg gaa gat ttt agg ttg gat att atc	496
Glu Glu Val Leu Tyr Pro Ala Met Glu Asp Phe Arg Leu Asp Ile Ile	
125 130 135	
ata ggc tca ggc cca gcg gct caa acc att aaa att gat tta ccc cct	544
Ile Gly Ser Gly Pro Ala Ala Gln Thr Ile Lys Ile Asp Leu Pro Pro	
140 145 150	
ttc act ctc atc ggc gct acc acc aga gcc gga atg ctc tct aac ccc	592
Phe Thr Leu Ile Gly Ala Thr Thr Arg Ala Gly Met Leu Ser Asn Pro	
155 160 165	
tta aga gac aga ttt ggc atg agt ttt aga atg caa ttt tat aac cct	640
Leu Arg Asp Arg Phe Gly Met Ser Phe Arg Met Gln Phe Tyr Asn Pro	
170 175 180	
agc gaa ctg gcc ctc atc att aaa aaa gct gcc gtt aaa ctc aac caa	688
Ser Glu Leu Ala Leu Ile Ile Lys Lys Ala Ala Val Lys Leu Asn Gln	
185 190 195 200	
gac atc aaa caa gaa agt gct gat gaa atc gct aaa agg agt aga ggc	736
Asp Ile Lys Gln Glu Ser Ala Asp Glu Ile Ala Lys Arg Ser Arg Gly	
205 210 215	

acg cca agg atc gct tta agg ctt tta aaa agg gtg cgc gat ttt gcg 784
 Thr Pro Arg Ile Ala Leu Arg Leu Leu Lys Arg Val Arg Asp Phe Ala
 220 225 230

cta gtc aaa aat tca agc ttg atg gat tta aac atc act ttg cat gct 832
 Leu Val Lys Asn Ser Ser Leu Met Asp Leu Asn Ile Thr Leu His Ala
 235 240 245

ttg aat gaa tta ggc gtg aat gaa tta ggc ttt gat gaa gcg gat ttg 880
 Leu Asn Glu Leu Gly Val Asn Glu Leu Gly Phe Asp Glu Ala Asp Leu
 250 255 260

gcg tat tta tct ttg ttg gct aac gct caa gga aag ccg gtg ggt ttg 928
 Ala Tyr Leu Ser Leu Leu Ala Asn Ala Gln Gly Lys Pro Val Gly Leu
 265 270 275 280

aac acg att gca gca tct atg aga gaa gat gaa ggc acg att gaa gac 976
 Asn Thr Ile Ala Ala Ser Met Arg Glu Asp Glu Gly Thr Ile Glu Asp
 285 290 295

gtg att gag cct ttt tta ctc gct aat ggt tat tta gag cgc acc gct 1024
 Val Ile Glu Pro Phe Leu Leu Ala Asn Gly Tyr Leu Glu Arg Thr Ala
 300 305 310

aaa ggc aga atc gcc acg cct aaa acc cat gag ctc tta aaa atc ccc 1072
 Lys Gly Arg Ile Ala Thr Pro Lys Thr His Glu Leu Leu Lys Ile Pro
 315 320 325

act tta aac ccc caa act tta ttt taatcttggt tagaaagaaa attacactac 1126
 Thr Leu Asn Pro Gln Thr Leu Phe
 330 335

aataacgata aaatttttaaa ggggtgtaaaa gtagattggt atggt 1171

<210> 128
 <211> 336
 <212> PRT
 <213> Helicobacter pylori

<400> 128
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 1 5 10 15
 Gln Glu Val Ser Leu Arg Pro Ser Leu Trp Glu Asp Phe Ile Gly Gln
 20 25 30
 Glu Lys Ile Lys Ser Asn Leu Gln Ile Ser Ile Cys Ala Ala Lys Lys
 35 40 45
 Arg Gln Glu Ser Leu Asp His Met Leu Phe Phe Gly Pro Pro Gly Leu
 50 55 60
 Gly Lys Thr Ser Ile Ser His Ile Ile Ala Lys Glu Met Glu Thr Asn
 65 70 75 80
 Ile Lys Ile Thr Ala Ala Pro Met Ile Glu Lys Ser Gly Asp Leu Ala
 85 90 95
 Ala Ile Leu Thr Asn Leu Gln Ala Lys Asp Ile Leu Phe Ile Asp Glu
 100 105 110

35	40	45	50	
cag ctc tcc cct att gaa ggg gtc atg gta gcg gtt aaa atc agt ttt				308
Gln Leu Ser Pro Ile Glu Gly Val Met Val Ala Val Lys Ile Ser Phe				
	55	60	65	
tca gcc gct atc gtc att tcc atg ccc att att ttt tgg caa tta tgg				356
Ser Ala Ala Ile Val Ile Ser Met Pro Ile Ile Phe Trp Gln Leu Trp				
	70	75	80	
ctc ttt atc gct cca ggg ctt tac aag aat gaa aaa aaa gtg att ttg				404
Leu Phe Ile Ala Pro Gly Leu Tyr Lys Asn Glu Lys Lys Val Ile Leu				
	85	90	95	
cct ttt gtg ttt ttt ggg agt ggg atg ttt ttg att ggg gcg gcg ttt				452
Pro Phe Val Phe Phe Gly Ser Gly Met Phe Leu Ile Gly Ala Ala Phe				
	100	105	110	
tct tat tat gtg gtg ttc cct ttc att att gaa tac tta gcc act ttt				500
Ser Tyr Tyr Val Val Phe Pro Phe Ile Ile Glu Tyr Leu Ala Thr Phe				
	115	120	125	130
ggg agc gat gtg ttt gcg gct aat att tct gcg tcc agt tac gtg agc				548
Gly Ser Asp Val Phe Ala Ala Asn Ile Ser Ala Ser Ser Tyr Val Ser				
	135	140	145	
ttt ttc acg cgc ttg att tta ggc ttt ggc gtg gcg ttt gaa ttg cct				596
Phe Phe Thr Arg Leu Ile Leu Gly Phe Gly Val Ala Phe Glu Leu Pro				
	150	155	160	
gtt ttg gcg tat ttt ttg gct aaa gtg ggc ttg att act gat gcg agc				644
Val Leu Ala Tyr Phe Leu Ala Lys Val Gly Leu Ile Thr Asp Ala Ser				
	165	170	175	
ttg aaa gcg tat ttt aaa tac gct att gta gtg att ttt att gta gca				692
Leu Lys Ala Tyr Phe Lys Tyr Ala Ile Val Val Ile Phe Ile Val Ala				
	180	185	190	
gcc att atc act ccc cct gat gtg gtg agt caa atc ttt atg gcg ttg				740
Ala Ile Ile Thr Pro Pro Asp Val Val Ser Gln Ile Phe Met Ala Leu				
	195	200	205	210
ccc tta gtg ggg ctt tat ggg ctt tct att tta atc gcc aaa atg gtc				788
Pro Leu Val Gly Leu Tyr Gly Leu Ser Ile Leu Ile Ala Lys Met Val				
	215	220	225	
aat ccg gct ccc aaa gat aac gaa aat aac aac gaa aat aat aac gaa				836
Asn Pro Ala Pro Lys Asp Asn Glu Asn Asn Asn Glu Asn Asn Asn Glu				
	230	235	240	
aat aac acc aaa gag aat aca aag agc gag tcg tagttgaaag aatttgattt				889
Asn Asn Thr Lys Glu Asn Thr Lys Ser Glu Ser				
	245	250		
agaaagctat gattattatt tgcctaagga attgatcgca agctaccccg ttttgcccaa				949

agaaaaggct aaattactcg tctatgaaag gcgttcgcaa

989

<210> 130

<211> 253

<212> PRT

<213> Helicobacter pylori

<400> 130

Met	Phe	Glu	Asp	Leu	Lys	Pro	His	Leu	Gln	Glu	Leu	Arg	Lys	Arg	Leu
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Met	Val	Ser	Val	Gly	Thr	Ile	Leu	Val	Ala	Phe	Leu	Gly	Cys	Phe	His
		20						25					30		
Phe	Trp	Lys	Ser	Ile	Phe	Glu	Phe	Val	Lys	Asn	Ser	Tyr	Lys	Gly	Thr
	35						40					45			
Leu	Ile	Gln	Leu	Ser	Pro	Ile	Glu	Gly	Val	Met	Val	Ala	Val	Lys	Ile
	50					55					60				
Ser	Phe	Ser	Ala	Ala	Ile	Val	Ile	Ser	Met	Pro	Ile	Ile	Phe	Trp	Gln
65					70					75					80
Leu	Trp	Leu	Phe	Ile	Ala	Pro	Gly	Leu	Tyr	Lys	Asn	Glu	Lys	Lys	Val
			85					90						95	
Ile	Leu	Pro	Phe	Val	Phe	Phe	Gly	Ser	Gly	Met	Phe	Leu	Ile	Gly	Ala
			100					105						110	
Ala	Phe	Ser	Tyr	Tyr	Val	Val	Phe	Pro	Phe	Ile	Ile	Glu	Tyr	Leu	Ala
		115						120					125		
Thr	Phe	Gly	Ser	Asp	Val	Phe	Ala	Ala	Asn	Ile	Ser	Ala	Ser	Ser	Tyr
	130					135						140			
Val	Ser	Phe	Phe	Thr	Arg	Leu	Ile	Leu	Gly	Phe	Gly	Val	Ala	Phe	Glu
145					150					155					160
Leu	Pro	Val	Leu	Ala	Tyr	Phe	Leu	Ala	Lys	Val	Gly	Leu	Ile	Thr	Asp
			165						170					175	
Ala	Ser	Leu	Lys	Ala	Tyr	Phe	Lys	Tyr	Ala	Ile	Val	Val	Ile	Phe	Ile
			180						185					190	
Val	Ala	Ala	Ile	Ile	Thr	Pro	Pro	Asp	Val	Val	Ser	Gln	Ile	Phe	Met
	195						200						205		
Ala	Leu	Pro	Leu	Val	Gly	Leu	Tyr	Gly	Leu	Ser	Ile	Leu	Ile	Ala	Lys
	210					215					220				
Met	Val	Asn	Pro	Ala	Pro	Lys	Asp	Asn	Glu	Asn	Asn	Asn	Glu	Asn	Asn
225					230					235					240
Asn	Glu	Asn	Asn	Thr	Lys	Glu	Asn	Thr	Lys	Ser	Glu	Ser			
				245					250						

<210> 131

<211> 655

<212> DNA

<213> Helicobacter pylori

<220>

<221> CDS

<222> (31)...(600)

<400> 131

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			Met	Ser	Phe	Leu	Asn	Ile	Leu	Asn	
			1				5				

gct gaa aat ttg agt tat atg tct tct tct tat caa ata ggc acg gtg	102
Ala Glu Asn Leu Ser Tyr Met Ser Ser Ser Tyr Gln Ile Gly Thr Val	
10 15 20	
ttt atg cgc cct tta aac acc aac aag ctt tta caa ggg gct tca atc	150
Phe Met Arg Pro Leu Asn Thr Asn Lys Leu Leu Gln Gly Ala Ser Ile	
25 30 35 40	
ctt caa ggc tat gaa gtg aat cct aaa aac gat tgg gct tat tct agg	198
Leu Gln Gly Tyr Glu Val Asn Pro Lys Asn Asp Trp Ala Tyr Ser Arg	
45 50 55	
tat tat ttc ttt ata gat tat ggc aat gtg ctt ttt aat aat gac tct	246
Tyr Tyr Phe Phe Ile Asp Tyr Gly Asn Val Leu Phe Asn Asn Asp Ser	
60 65 70	
act tta caa gcg aac atg ttc act tat ggg gtg gga ggg gat ttt atg	294
Thr Leu Gln Ala Asn Met Phe Thr Tyr Gly Val Gly Gly Asp Phe Met	
75 80 85	
gtc gcc tac gct aaa aac cct atc aac cgc tgg gct ttt ttc ttt ggc	342
Val Ala Tyr Ala Lys Asn Pro Ile Asn Arg Trp Ala Phe Phe Phe Gly	
90 95 100	
ttg caa ctg gcc gct aac aca tgg ata ctc aac aat aaa gtc aaa gat	390
Leu Gln Leu Ala Ala Asn Thr Trp Ile Leu Asn Asn Lys Val Lys Asp	
105 110 115 120	
ttg gtg gtg aat act tgg gat tca tta aaa gat ttc aat ttt cac aac	438
Leu Val Val Asn Thr Trp Asp Ser Leu Lys Asp Phe Asn Phe His Asn	
125 130 135	
act tat ttc agg gct att ggg aag ttt ggg gtg cag ttt cgc acg atc	486
Thr Tyr Phe Arg Ala Ile Gly Lys Phe Gly Val Gln Phe Arg Thr Ile	
140 145 150	
gtt ttg tat cat aag gtg gat gta gaa att ggc atg aaa atc ttt cta	534
Val Leu Tyr His Lys Val Asp Val Glu Ile Gly Met Lys Ile Phe Leu	
155 160 165	
act cct gaa agg cgc agt ttg ttt gaa agg agc ttt ttg ttt ttt gtt	582
Thr Pro Glu Arg Arg Ser Leu Phe Glu Arg Ser Phe Leu Phe Phe Val	
170 175 180	
tcg cat tcg tgg cat ttt taaatggcgg agagagaggg attcgaaccc	630
Ser His Ser Trp His Phe	
185 190	
tcgaaggctt gcaccttaca cgcgt	655
<210> 132	
<211> 190	
<212> PRT	
<213> Helicobacter pylori	

<400> 132

Met	Ser	Phe	Leu	Asn	Ile	Leu	Asn	Ala	Glu	Asn	Leu	Ser	Tyr	Met	Ser
1				5					10					15	
Ser	Ser	Tyr	Gln	Ile	Gly	Thr	Val	Phe	Met	Arg	Pro	Leu	Asn	Thr	Asn
			20					25					30		
Lys	Leu	Leu	Gln	Gly	Ala	Ser	Ile	Leu	Gln	Gly	Tyr	Glu	Val	Asn	Pro
		35					40					45			
Lys	Asn	Asp	Trp	Ala	Tyr	Ser	Arg	Tyr	Tyr	Phe	Phe	Ile	Asp	Tyr	Gly
	50					55					60				
Asn	Val	Leu	Phe	Asn	Asn	Asp	Ser	Thr	Leu	Gln	Ala	Asn	Met	Phe	Thr
65					70					75					80
Tyr	Gly	Val	Gly	Gly	Asp	Phe	Met	Val	Ala	Tyr	Ala	Lys	Asn	Pro	Ile
				85					90				95		
Asn	Arg	Trp	Ala	Phe	Phe	Phe	Gly	Leu	Gln	Leu	Ala	Ala	Asn	Thr	Trp
			100					105					110		
Ile	Leu	Asn	Asn	Lys	Val	Lys	Asp	Leu	Val	Val	Asn	Thr	Trp	Asp	Ser
		115					120					125			
Leu	Lys	Asp	Phe	Asn	Phe	His	Asn	Thr	Tyr	Phe	Arg	Ala	Ile	Gly	Lys
	130						135				140				
Phe	Gly	Val	Gln	Phe	Arg	Thr	Ile	Val	Leu	Tyr	His	Lys	Val	Asp	Val
145					150					155				160	
Glu	Ile	Gly	Met	Lys	Ile	Phe	Leu	Thr	Pro	Glu	Arg	Arg	Ser	Leu	Phe
				165					170					175	
Glu	Arg	Ser	Phe	Leu	Phe	Phe	Val	Ser	His	Ser	Trp	His	Phe		
			180					185					190		

<210> 133

<211> 830

<212> DNA

<213> *Helicobacter pylori*

<220>

<221> CDS

<222> (31)...(714)

<400> 133

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			Met	Ala	Asp	Lys	Glu	Ile	Leu	Ile						
			1				5									
ttt	gta	gaa	ggt	cca	agc	gat	aag	gtg	ttt	tta	gaa	ggt	tat	ctg	tat	102
Phe	Val	Glu	Gly	Pro	Ser	Asp	Lys	Val	Phe	Leu	Glu	Val	Tyr	Leu	Tyr	
	10					15					20					
ttt	cta	gaa	aga	ttt	cca	atc	aaa	aac	ttt	aaa	gtg	caa	aat	gta	gat	150
Phe	Leu	Glu	Arg	Phe	Pro	Ile	Lys	Asn	Phe	Lys	Val	Gln	Asn	Val	Asp	
	25				30				35					40		
gga	aaa	gat	aac	ctg	tct	aaa	cga	ttg	ctt	gaa	att	gaa	aaa	tac	gat	198
Gly	Lys	Asp	Asn	Leu	Ser	Lys	Arg	Leu	Leu	Glu	Ile	Glu	Lys	Tyr	Asp	
			45					50					55			
aaa	aca	ctt	atc	att	ttt	gat	gcg	gat	aaa	gac	tat	gag	agt	aat	aaa	246
Lys	Thr	Leu	Ile	Ile	Phe	Asp	Ala	Asp	Lys	Asp	Tyr	Glu	Ser	Asn	Lys	

60	65	70	
aaa gag att tta aaa att gta tca gaa tcg aaa caa act att tca gaa			294
Lys Glu Ile Leu Lys Ile Val Ser Glu Ser Lys Gln Thr Ile Ser Glu			
75	80	85	
gaa caa att ttt tta ttt cct aat aat caa gat gat ggc gat tta gaa			342
Glu Gln Ile Phe Leu Phe Pro Asn Asn Gln Asp Asp Gly Asp Leu Glu			
90	95	100	
acc cta tta tta aag att gct aac cac aaa gag ttc ata aat tgt ttt			390
Thr Leu Leu Leu Lys Ile Ala Asn His Lys Glu Phe Ile Asn Cys Phe			
105	110	115	120
gaa agc tat ttg gat tgt att aaa aag aaa gaa cat tac aaa ccg att			438
Glu Ser Tyr Leu Asp Cys Ile Lys Lys Lys Glu His Tyr Lys Pro Ile			
125	130	135	
aaa aac ata aga aaa agt aag tgg tat gcc tat tta gaa gcg ctt gga			486
Lys Asn Ile Arg Lys Ser Lys Trp Tyr Ala Tyr Leu Glu Ala Leu Gly			
140	145	150	
tta gaa aaa ttt ttc caa tac aca tgg gac aca aag aaa aag aat aat			534
Leu Glu Lys Phe Phe Gln Tyr Thr Trp Asp Thr Lys Lys Lys Asn Asn			
155	160	165	
aaa aaa aag ctt atc att gac gat aaa gat gga gat gag att gag ata			582
Lys Lys Lys Leu Ile Ile Asp Asp Lys Asp Gly Asp Glu Ile Glu Ile			
170	175	180	
aaa gat caa tat aaa gga gat tat gaa gaa cta aaa aaa gtt ctt gat			630
Lys Asp Gln Tyr Lys Gly Asp Tyr Glu Glu Leu Lys Lys Val Leu Asp			
185	190	195	200
ctt aac tca aaa tct ctt att ccc ctt aaa aat ttt tta ggg caa ttt			678
Leu Asn Ser Lys Ser Leu Ile Pro Leu Lys Asn Phe Leu Gly Gln Phe			
205	210	215	
gca gaa aat aat caa aaa aca aat cct aaa att ttc taatttaaca			724
Ala Glu Asn Asn Gln Lys Thr Asn Pro Lys Ile Phe			
220	225		
aaatatatta caattaccaa aaaagtatta tttttcttaa aagggtgcgct gtgaaattgt			784
ggtttcctta ttttttagcg attgtgttct tgcattgcatt gggttt			830
<210> 134			
<211> 228			
<212> PRT			
<213> Helicobacter pylori			
<400> 134			
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1 5 10 15			
Val Phe Leu Glu Val Tyr Leu Tyr Phe Leu Glu Arg Phe Pro Ile Lys			
20 25 30			

Asn	Phe	Lys	Val	Gln	Asn	Val	Asp	Gly	Lys	Asp	Asn	Leu	Ser	Lys	Arg
	35						40					45			
Leu	Leu	Glu	Ile	Glu	Lys	Tyr	Asp	Lys	Thr	Leu	Ile	Ile	Phe	Asp	Ala
	50						55					60			
Asp	Lys	Asp	Tyr	Glu	Ser	Asn	Lys	Lys	Glu	Ile	Leu	Lys	Ile	Val	Ser
65					70					75					80
Glu	Ser	Lys	Gln	Thr	Ile	Ser	Glu	Glu	Gln	Ile	Phe	Leu	Phe	Pro	Asn
				85					90					95	
Asn	Gln	Asp	Asp	Gly	Asp	Leu	Glu	Thr	Leu	Leu	Leu	Lys	Ile	Ala	Asn
		100						105						110	
His	Lys	Glu	Phe	Ile	Asn	Cys	Phe	Glu	Ser	Tyr	Leu	Asp	Cys	Ile	Lys
	115						120					125			
Lys	Lys	Glu	His	Tyr	Lys	Pro	Ile	Lys	Asn	Ile	Arg	Lys	Ser	Lys	Trp
	130					135					140				
Tyr	Ala	Tyr	Leu	Glu	Ala	Leu	Gly	Leu	Glu	Lys	Phe	Phe	Gln	Tyr	Thr
145					150					155					160
Trp	Asp	Thr	Lys	Lys	Lys	Asn	Asn	Lys	Lys	Lys	Leu	Ile	Ile	Asp	Asp
				165					170					175	
Lys	Asp	Gly	Asp	Glu	Ile	Glu	Ile	Lys	Asp	Gln	Tyr	Lys	Gly	Asp	Tyr
			180					185					190		
Glu	Glu	Leu	Lys	Lys	Val	Leu	Asp	Leu	Asn	Ser	Lys	Ser	Leu	Ile	Pro
	195						200					205			
Leu	Lys	Asn	Phe	Leu	Gly	Gln	Phe	Ala	Glu	Asn	Asn	Gln	Lys	Thr	Asn
	210					215					220				
Pro	Lys	Ile	Phe												
225															

<210> 135
 <211> 1349
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (78)...(1298)

<400> 135
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 aatcataagg aaaaaat atg gca aaa agt att gaa ttg caa gag ata gaa 110
 Met Ala Lys Ser Ile Glu Leu Gln Glu Ile Glu
 1 5 10

gtg tgg gat ggc aat acc gct agt tct aac gct tta aga cag gct caa 158
 Val Trp Asp Gly Asn Thr Ala Ser Ser Asn Ala Leu Arg Gln Ala Gln
 15 20 25

att gat gtc atc gca gcc tat cct atc acc cca tca acg ccc att gtg 206
 Ile Asp Val Ile Ala Ala Tyr Pro Ile Thr Pro Ser Thr Pro Ile Val
 30 35 40

caa aat tat ggc tcg ttt aag gat aat ggc tat gtt gat ggc gaa ttc 254
 Gln Asn Tyr Gly Ser Phe Lys Asp Asn Gly Tyr Val Asp Gly Glu Phe
 45 50 55

gtt tta gtg gaa tct gag cat gcc gcc atg agc gca tgc gtg gga gct	302
Val Leu Val Glu Ser Glu His Ala Ala Met Ser Ala Cys Val Gly Ala	
60 65 70 75	
gcc gca gct gga ggg aga gtc agc act gcg act agc tct caa ggt ttg	350
Ala Ala Ala Gly Gly Arg Val Ser Thr Ala Thr Ser Ser Gln Gly Leu	
80 85 90	
gcg tta atg gta gag gtt tta tac cag gct tct gga atg cgt ttg cct	398
Ala Leu Met Val Glu Val Leu Tyr Gln Ala Ser Gly Met Arg Leu Pro	
95 100 105	
atc gtt ttg aat tta gtc aat cgt gct tta gca gcc cct ttg aat atc	446
Ile Val Leu Asn Leu Val Asn Arg Ala Leu Ala Ala Pro Leu Asn Ile	
110 115 120	
cat ggc gat cat tct gat atg tat tta agc agg gat tct ggt tgg ata	494
His Gly Asp His Ser Asp Met Tyr Leu Ser Arg Asp Ser Gly Trp Ile	
125 130 135	
agt tta tgc aca tgc aac ccc caa gaa gct tat gat ttc act tta atg	542
Ser Leu Cys Thr Cys Asn Pro Gln Glu Ala Tyr Asp Phe Thr Leu Met	
140 145 150 155	
gcg ttt aga atc gca gag cat caa aag gtg cgc gtg cct act att gtc	590
Ala Phe Arg Ile Ala Glu His Gln Lys Val Arg Val Pro Thr Ile Val	
160 165 170	
aat caa gac ggg ttt tta tgc tcg cac acc gtg caa aat gtc cgc cct	638
Asn Gln Asp Gly Phe Leu Cys Ser His Thr Val Gln Asn Val Arg Pro	
175 180 185	
ttg agc gat gca gtg gct tac caa ttc gtg ggc gaa tac caa acc aag	686
Leu Ser Asp Ala Val Ala Tyr Gln Phe Val Gly Glu Tyr Gln Thr Lys	
190 195 200	
cat tcc ctt ttg gat ttt gat aaa ccg gta agc tat ggc gcg caa gct	734
His Ser Leu Leu Asp Phe Asp Lys Pro Val Ser Tyr Gly Ala Gln Ala	
205 210 215	
gaa gaa gaa tgg cat tat gag cat aaa gcc caa ctc cac cat gcc atc	782
Glu Glu Glu Trp His Tyr Glu His Lys Ala Gln Leu His His Ala Ile	
220 225 230 235	
atg agc gcg tct tct gtg att gaa gaa gtg ttc aat gat ttc gct aaa	830
Met Ser Ala Ser Ser Val Ile Glu Glu Val Phe Asn Asp Phe Ala Lys	
240 245 250	
ctc aca ggc agg caa tac cat tta acc aaa act ttc cag cta gaa gac	878
Leu Thr Gly Arg Gln Tyr His Leu Thr Lys Thr Phe Gln Leu Glu Asp	
255 260 265	
gct gaa atc gct atc ttt gcg tta ggc act act tat gaa tca gcg atc	926
Ala Glu Ile Ala Ile Phe Ala Leu Gly Thr Thr Tyr Glu Ser Ala Ile	
270 275 280	

gta gcg gct aaa gaa atg cgt aaa aaa ggc att aag gcc ggc gtg gct 974
 Val Ala Ala Lys Glu Met Arg Lys Lys Gly Ile Lys Ala Gly Val Ala
 285 290 295

acc atc cat tcc ttg cgc ccc ttc cct tat gaa aga tta ggg cag gat 1022
 Thr Ile His Ser Leu Arg Pro Phe Pro Tyr Glu Arg Leu Gly Gln Asp
 300 305 310 315

ttg aaa aat ctt aaa gct tta gcg att tta gac aag agc tct cca gcg 1070
 Leu Lys Asn Leu Lys Ala Leu Ala Ile Leu Asp Lys Ser Ser Pro Ala
 320 325 330

ggc act atg ggg gcg atg ttt aat gaa gta acg agc gcg gtg tat caa 1118
 Gly Thr Met Gly Ala Met Phe Asn Glu Val Thr Ser Ala Val Tyr Gln
 335 340 345

acg caa ggg act aaa cac ccc gtg gtg tct aac tac att tat ggt tta 1166
 Thr Gln Gly Thr Lys His Pro Val Val Ser Asn Tyr Ile Tyr Gly Leu
 350 355 360

ggc gaa agg gat atg acg atc gcg cat tta tgc gaa att ttt gaa gaa 1214
 Gly Glu Arg Asp Met Thr Ile Ala His Leu Cys Glu Ile Phe Glu Glu
 365 370 375

atc aat gaa gac gct ctt aaa ggc acg ctc acg cac cct acc caa caa 1262
 Ile Asn Glu Asp Ala Leu Lys Gly Thr Leu Thr His Pro Thr Gln Gln
 380 385 390 395

ttc gta ggc ttg cac ggc cct aaa atg agc ttt ttt taaaaaggaa 1308
 Phe Val Gly Leu His Gly Pro Lys Met Ser Phe Phe
 400 405

atatcatggt aaaagaagtc aaaacactca aagggttttag c 1349

<210> 136
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 <212> PRT
 <213> Helicobacter pylori

<400> 136
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 Ala Tyr Pro Ile Thr Pro Ser Thr Pro Ile Val Gln Asn Tyr Gly Ser
 35 40 45
 Phe Lys Asp Asn Gly Tyr Val Asp Gly Glu Phe Val Leu Val Glu Ser
 50 55 60
 Glu His Ala Ala Met Ser Ala Cys Val Gly Ala Ala Ala Ala Gly Gly
 65 70 75 80
 Arg Val Ser Thr Ala Thr Ser Ser Gln Gly Leu Ala Leu Met Val Glu
 85 90 95
 Val Leu Tyr Gln Ala Ser Gly Met Arg Leu Pro Ile Val Leu Asn Leu
 100 105 110

Leu	Gly	Leu	Phe	Tyr	Thr	Leu	Asn	Ala	Glu	Ser	Phe	Lys	Asp	Val	Leu		
			20					25					30				
act	aaa	gtg	gat	tac	act	ttt	ttt	aat	aaa	aag	gtg	ggt	tcg	ccc	atc	144	
Thr	Lys	Val	Asp	Tyr	Thr	Phe	Phe	Asn	Lys	Lys	Val	Val	Ser	Pro	Ile		
		35					40				45						
aaa	cgc	tat	gcg	gat	aga	tcg	gcg	ttt	tat	ctg	ggg	ctt	ggg	tat	caa	192	
Lys	Arg	Tyr	Ala	Asp	Arg	Ser	Ala	Phe	Tyr	Leu	Gly	Leu	Gly	Tyr	Gln		
	50					55				60							
tta	ggg	agc	att	cag	cac	aac	tct	agc	aac	ttg	aat	tta	tcc	cag	caa	240	
Leu	Gly	Ser	Ile	Gln	His	Asn	Ser	Ser	Asn	Leu	Asn	Leu	Ser	Gln	Gln		
65					70				75						80		
ttc	aat	aag	agt	cag	att	att	ttc	agc	gat	agt	cta	agc	cct	ggt	ttt	288	
Phe	Asn	Lys	Ser	Gln	Ile	Ile	Phe	Ser	Asp	Ser	Leu	Ser	Pro	Val	Phe		
				85				90					95				
aaa	aat	tcg	tat	gtg	tct	aat	ggc	ctt	ggc	gtg	caa	gtg	ggc	tat	aag	336	
Lys	Asn	Ser	Tyr	Val	Ser	Asn	Gly	Leu	Gly	Val	Gln	Val	Gly	Tyr	Lys		
			100				105					110					
tgg	gtg	ggt	aag	cat	gaa	gag	acg	aaa	tgg	ttt	ggc	ttc	agg	tgg	ggg	384	
Trp	Val	Gly	Lys	His	Glu	Glu	Thr	Lys	Trp	Phe	Gly	Phe	Arg	Trp	Gly		
		115					120					125					
ctg	ttt	tat	gat	ttg	agc	gcc	tct	ctt	tat	ggc	caa	aaa	gaa	tca	cag	432	
Leu	Phe	Tyr	Asp	Leu	Ser	Ala	Ser	Leu	Tyr	Gly	Gln	Lys	Glu	Ser	Gln		
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tct	gtc	atc	att	tcc	act	tac	ggc	act	tat	atg	gat	tta	tta	ttg	aac	480	
Ser	Val	Ile	Ile	Ser	Thr	Tyr	Gly	Thr	Tyr	Met	Asp	Leu	Leu	Leu	Asn		
145					150				155						160		
gct	tat	aat	ggg	gat	aag	ttt	ttt	gct	ggg	ttc	aat	ctg	ggg	att	gct	528	
Ala	Tyr	Asn	Gly	Asp	Lys	Phe	Phe	Ala	Gly	Phe	Asn	Leu	Gly	Ile	Ala		
				165				170					175				
ttt	gct	gga	gtg	tat	gac	aaa	gtg	agc	gat	gcg	tta	ttg	tat	caa	gcc	576	
Phe	Ala	Gly	Val	Tyr	Asp	Lys	Val	Ser	Asp	Ala	Leu	Leu	Tyr	Gln	Ala		
			180					185					190				
ctt	ctt	tta	gac	act	ttt	ggc	ggg	aaa	gtg	gat	cca	aat	ggc	ttc	cag	624	
Leu	Leu	Leu	Asp	Thr	Phe	Gly	Gly	Lys	Val	Asp	Pro	Asn	Gly	Phe	Gln		
		195					200					205					
ttt	ttg	gta	aat	tta	ggg	ggt	cgt	tta	ggg	aat	aag	cac	aac	caa	ttt	672	
Phe	Leu	Val	Asn	Leu	Gly	Val	Arg	Leu	Gly	Asn	Lys	His	Asn	Gln	Phe		
	210					215					220						
ggc	ttt	ggg	att	aaa	atc	cct	act	tat	tat	ttt	aac	cat	tat	tat	tcc	720	
Gly	Phe	Gly	Ile	Lys	Ile	Pro	Thr	Tyr	Tyr	Phe	Asn	His	Tyr	Tyr	Ser		
225					230					235					240		

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 Met Asn Asn Ile Ser Asn Asn Ser Glu Asp Val Leu Lys Val Leu Arg
 245 250 255

ttt tta gaa tac ggg atc aac agc ttg tta tac caa gtt gat ttc agg 816
 Phe Leu Glu Tyr Gly Ile Asn Ser Leu Leu Tyr Gln Val Asp Phe Arg
 260 265 270

cgc aat tac tcg gtt tat ttc aac tac act tat att ttt taagcgatag 865
 Arg Asn Tyr Ser Val Tyr Phe Asn Tyr Thr Tyr Ile Phe
 275 280 285

cgtttaagc gttcttaatt gagcgatttc gtctctcaaa cgcacgcgtt cttcaaaatc 925
 caaattcttc gtgcattctc gca 948

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 Thr Lys Val Asp Tyr Thr Phe Phe Asn Lys Lys Val Val Ser Pro Ile
 35 40 45
 Lys Arg Tyr Ala Asp Arg Ser Ala Phe Tyr Leu Gly Leu Gly Tyr Gln
 50 55 60
 Leu Gly Ser Ile Gln His Asn Ser Ser Asn Leu Asn Leu Ser Gln Gln
 65 70 75 80
 Phe Asn Lys Ser Gln Ile Ile Phe Ser Asp Ser Leu Ser Pro Val Phe
 85 90 95
 Lys Asn Ser Tyr Val Ser Asn Gly Leu Gly Val Gln Val Gly Tyr Lys
 100 105 110
 Trp Val Gly Lys His Glu Glu Thr Lys Trp Phe Gly Phe Arg Trp Gly
 115 120 125
 Leu Phe Tyr Asp Leu Ser Ala Ser Leu Tyr Gly Gln Lys Glu Ser Gln
 130 135 140
 Ser Val Ile Ile Ser Thr Tyr Gly Thr Tyr Met Asp Leu Leu Leu Asn
 145 150 155 160
 Ala Tyr Asn Gly Asp Lys Phe Phe Ala Gly Phe Asn Leu Gly Ile Ala
 165 170 175
 Phe Ala Gly Val Tyr Asp Lys Val Ser Asp Ala Leu Leu Tyr Gln Ala
 180 185 190
 Leu Leu Leu Asp Thr Phe Gly Gly Lys Val Asp Pro Asn Gly Phe Gln
 195 200 205
 Phe Leu Val Asn Leu Gly Val Arg Leu Gly Asn Lys His Asn Gln Phe
 210 215 220
 Gly Phe Gly Ile Lys Ile Pro Thr Tyr Tyr Phe Asn His Tyr Tyr Ser
 225 230 235 240
 Met Asn Asn Ile Ser Asn Asn Ser Glu Asp Val Leu Lys Val Leu Arg
 245 250 255
 Phe Leu Glu Tyr Gly Ile Asn Ser Leu Leu Tyr Gln Val Asp Phe Arg
 260 265 270

Arg Asn Tyr Ser Val Tyr Phe Asn Tyr Thr Tyr Ile Phe
 275 280 285

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<220>
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 <222> (35)...(1735)

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 Met Arg Arg Ser Phe Leu Lys
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acg att ggc ttg ggt gtg ata gca ctc ttt ttg ggt ttg tta aac cct 103
 Thr Ile Gly Leu Gly Val Ile Ala Leu Phe Leu Gly Leu Leu Asn Pro
 10 15 20

ttg agt gcg gcg agt tac ccc ccc att aaa aac act aaa gta ggc tta 151
 Leu Ser Ala Ala Ser Tyr Pro Pro Ile Lys Asn Thr Lys Val Gly Leu
 25 30 35

gcc ctt tct agc cac ccg cta gct agt gag atc ggg caa aag gtt tta 199
 Ala Leu Ser Ser His Pro Leu Ala Ser Glu Ile Gly Gln Lys Val Leu
 40 45 50 55

gaa gag gga ggt aat gcg att gat gcg gct gta gcg ata ggt ttt gct 247
 Glu Glu Gly Gly Asn Ala Ile Asp Ala Ala Val Ala Ile Gly Phe Ala
 60 65 70

ctt gcg gtt gtc cat ccg gca gca ggc aat att ggt gga ggc ggt ttt 295
 Leu Ala Val Val His Pro Ala Ala Gly Asn Ile Gly Gly Gly Gly Phe
 75 80 85

gcg gtt atc cat ttg gct aat ggt gaa aat gtt gcg tta gat ttt aga 343
 Ala Val Ile His Leu Ala Asn Gly Glu Asn Val Ala Leu Asp Phe Arg
 90 95 100

gaa aaa gcc ccc tta aaa gcc act aaa aac atg ttt tta gac aag caa 391
 Glu Lys Ala Pro Leu Lys Ala Thr Lys Asn Met Phe Leu Asp Lys Gln
 105 110 115

ggc aat gta gtc cct aaa ctc agc gaa gat ggc tat ttg gcg gcc ggg 439
 Gly Asn Val Val Pro Lys Leu Ser Glu Asp Gly Tyr Leu Ala Ala Gly
 120 125 130 135

gtt cct gga acg gtg gca ggc atg gaa gcg atg ctg aaa aaa tac ggc 487
 Val Pro Gly Thr Val Ala Gly Met Glu Ala Met Leu Lys Lys Tyr Gly
 140 145 150

act aaa aaa cta tcg caa ctc att gat cct gcc att aaa ttg gct gaa 535

Thr	Lys	Lys	Leu	Ser	Gln	Leu	Ile	Asp	Pro	Ala	Ile	Lys	Leu	Ala	Glu		
			155					160					165				
aat	ggt	tat	gcg	att	tca	caa	aga	caa	gca	gaa	acc	cta	aag	gaa	gca	583	
Asn	Gly	Tyr	Ala	Ile	Ser	Gln	Arg	Gln	Ala	Glu	Thr	Leu	Lys	Glu	Ala		
		170					175					180					
agg	gag	cgg	ttt	tta	aaa	tac	agt	tct	agc	aaa	aag	tat	ttt	ttt	aaa	631	
Arg	Glu	Arg	Phe	Leu	Lys	Tyr	Ser	Ser	Ser	Lys	Lys	Tyr	Phe	Phe	Lys		
	185					190					195						
aaa	ggc	cat	ctt	gat	tat	caa	gaa	ggg	gat	ttg	ttt	gtc	caa	aaa	gat	679	
Lys	Gly	His	Leu	Asp	Tyr	Gln	Glu	Gly	Asp	Leu	Phe	Val	Gln	Lys	Asp		
200					205				210						215		
tta	gcc	aag	act	ttg	aat	caa	atc	aaa	acg	cta	ggc	gct	aaa	ggc	ttt	727	
Leu	Ala	Lys	Thr	Leu	Asn	Gln	Ile	Lys	Thr	Leu	Gly	Ala	Lys	Gly	Phe		
			220					225						230			
tat	caa	ggg	caa	gtc	gct	gag	ctt	att	gag	aaa	gac	atg	aaa	aaa	aat	775	
Tyr	Gln	Gly	Gln	Val	Ala	Glu	Leu	Ile	Glu	Lys	Asp	Met	Lys	Lys	Asn		
		235					240						245				
gga	ggg	att	atc	act	aaa	gaa	gat	tta	gcc	agt	tac	aat	gtg	aaa	tgg	823	
Gly	Gly	Ile	Ile	Thr	Lys	Glu	Asp	Leu	Ala	Ser	Tyr	Asn	Val	Lys	Trp		
		250					255					260					
cgc	aaa	ccc	gtg	gta	ggg	agt	tat	cgt	ggg	tat	aag	atc	att	tct	atg	871	
Arg	Lys	Pro	Val	Val	Gly	Ser	Tyr	Arg	Gly	Tyr	Lys	Ile	Ile	Ser	Met		
	265					270					275						
tcg	ccg	cca	agt	tcg	gga	ggc	acg	cat	ttg	atc	cag	att	tta	aat	gtc	919	
Ser	Pro	Pro	Ser	Ser	Gly	Gly	Thr	His	Leu	Ile	Gln	Ile	Leu	Asn	Val		
280					285				290						295		
atg	gaa	aat	gcg	gat	tta	agc	gcc	ctt	ggg	tat	ggg	gct	tct	aag	aat	967	
Met	Glu	Asn	Ala	Asp	Leu	Ser	Ala	Leu	Gly	Tyr	Gly	Ala	Ser	Lys	Asn		
			300					305					310				
atc	cat	atc	gct	gcc	gaa	gcg	atg	cgt	cag	gct	tat	gcg	gat	aga	tcg	1015	
Ile	His	Ile	Ala	Ala	Glu	Ala	Met	Arg	Gln	Ala	Tyr	Ala	Asp	Arg	Ser		
			315				320						325				
gtt	tat	atg	gga	gac	gct	gat	ttt	gtt	tcg	gtg	ccg	gtg	gat	aaa	ttg	1063	
Val	Tyr	Met	Gly	Asp	Ala	Asp	Phe	Val	Ser	Val	Pro	Val	Asp	Lys	Leu		
		330					335					340					
att	aat	aaa	gcg	tat	gcc	aaa	aag	att	ttt	gac	act	atc	cag	cca	gat	1111	
Ile	Asn	Lys	Ala	Tyr	Ala	Lys	Lys	Ile	Phe	Asp	Thr	Ile	Gln	Pro	Asp		
	345					350				355							
acg	gtt	acg	cca	agc	tct	caa	atc	aaa	cca	gga	atg	ggg	cag	ttg	cat	1159	
Thr	Val	Thr	Pro	Ser	Ser	Gln	Ile	Lys	Pro	Gly	Met	Gly	Gln	Leu	His		
360					365				370					375			

gag ggg agc aat acc acg cat tat tct gta gcg gac agg tgg ggg aat	1207
Glu Gly Ser Asn Thr Thr His Tyr Ser Val Ala Asp Arg Trp Gly Asn	
380 385 390	
gca gtc agc gtt act tac acc att aac gct tct tat gga agc gct gcc	1255
Ala Val Ser Val Thr Tyr Thr Ile Asn Ala Ser Tyr Gly Ser Ala Ala	
395 400 405	
agt att gat ggg gca gga ttt tta ttg aac aat gaa atg gat gat ttt	1303
Ser Ile Asp Gly Ala Gly Phe Leu Leu Asn Asn Glu Met Asp Asp Phe	
410 415 420	
tcc atc aag cca ggg aat ccc aat ctc tat ggt tta gta ggg ggc gat	1351
Ser Ile Lys Pro Gly Asn Pro Asn Leu Tyr Gly Leu Val Gly Gly Asp	
425 430 435	
gcg aat gcg att gaa gcc aat aag cgc cct tta agc tcc atg tcg cct	1399
Ala Asn Ala Ile Glu Ala Asn Lys Arg Pro Leu Ser Ser Met Ser Pro	
440 445 450 455	
acg att gtg ttg aaa aac aat aag gtt ttt ttg gtg gtg gga agc cct	1447
Thr Ile Val Leu Lys Asn Asn Lys Val Phe Leu Val Val Gly Ser Pro	
460 465 470	
gga ggg tct agg att atc act acg gtg ctg caa gtg att tct aat gtc	1495
Gly Gly Ser Arg Ile Ile Thr Thr Val Leu Gln Val Ile Ser Asn Val	
475 480 485	
att gat tat aat atg aat att tct gaa gcg gtt tca gcc cca aga ttt	1543
Ile Asp Tyr Asn Met Asn Ile Ser Glu Ala Val Ser Ala Pro Arg Phe	
490 495 500	
cac atg caa tgg ctc cct gat gaa tta agg att gaa aag ttt ggc atg	1591
His Met Gln Trp Leu Pro Asp Glu Leu Arg Ile Glu Lys Phe Gly Met	
505 510 515	
ccc gct gat gtg aaa gac aac ctc act aaa atg ggc tat caa atc gtt	1639
Pro Ala Asp Val Lys Asp Asn Leu Thr Lys Met Gly Tyr Gln Ile Val	
520 525 530 535	
act aag ccg gtc atg ggt gat gtg aat gcg atc caa gtt ttg cct aaa	1687
Thr Lys Pro Val Met Gly Asp Val Asn Ala Ile Gln Val Leu Pro Lys	
540 545 550	
act aaa ggg agc gtt ttc tat ggt tca acg gat cca agg aaa gaa ttt	1735
Thr Lys Gly Ser Val Phe Tyr Gly Ser Thr Asp Pro Arg Lys Glu Phe	
555 560 565	
taattctttg tcatatacag gtttttaaatc ctatttagcc ttatttttttg ggatggaggg	1795
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<211> 567

<212> PRT

<213> Helicobacter pylori

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			20					25					30		
Lys	Asn	Thr	Lys	Val	Gly	Leu	Ala	Leu	Ser	Ser	His	Pro	Leu	Ala	Ser
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Glu	Ile	Gly	Gln	Lys	Val	Leu	Glu	Glu	Gly	Gly	Asn	Ala	Ile	Asp	Ala
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Ala	Val	Ala	Ile	Gly	Phe	Ala	Leu	Ala	Val	Val	His	Pro	Ala	Ala	Gly
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Asn	Ile	Gly	Gly	Gly	Gly	Phe	Ala	Val	Ile	His	Leu	Ala	Asn	Gly	Glu
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Asn	Val	Ala	Leu	Asp	Phe	Arg	Glu	Lys	Ala	Pro	Leu	Lys	Ala	Thr	Lys
			100					105					110		
Asn	Met	Phe	Leu	Asp	Lys	Gln	Gly	Asn	Val	Val	Pro	Lys	Leu	Ser	Glu
		115					120					125			
Asp	Gly	Tyr	Leu	Ala	Ala	Gly	Val	Pro	Gly	Thr	Val	Ala	Gly	Met	Glu
	130					135					140				
Ala	Met	Leu	Lys	Lys	Tyr	Gly	Thr	Lys	Lys	Leu	Ser	Gln	Leu	Ile	Asp
145				150						155					160
Pro	Ala	Ile	Lys	Leu	Ala	Glu	Asn	Gly	Tyr	Ala	Ile	Ser	Gln	Arg	Gln
			165					170						175	
Ala	Glu	Thr	Leu	Lys	Glu	Ala	Arg	Glu	Arg	Phe	Leu	Lys	Tyr	Ser	Ser
			180					185					190		
Ser	Lys	Lys	Tyr	Phe	Phe	Lys	Lys	Gly	His	Leu	Asp	Tyr	Gln	Glu	Gly
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Asp	Leu	Phe	Val	Gln	Lys	Asp	Leu	Ala	Lys	Thr	Leu	Asn	Gln	Ile	Lys
	210					215					220				
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Glu	Lys	Asp	Met	Lys	Lys	Asn	Gly	Gly	Ile	Ile	Thr	Lys	Glu	Asp	Leu
			245					250						255	
Ala	Ser	Tyr	Asn	Val	Lys	Trp	Arg	Lys	Pro	Val	Val	Gly	Ser	Tyr	Arg
			260					265					270		
Gly	Tyr	Lys	Ile	Ile	Ser	Met	Ser	Pro	Pro	Ser	Ser	Gly	Gly	Thr	His
		275					280					285			
Leu	Ile	Gln	Ile	Leu	Asn	Val	Met	Glu	Asn	Ala	Asp	Leu	Ser	Ala	Leu
	290					295					300				
Gly	Tyr	Gly	Ala	Ser	Lys	Asn	Ile	His	Ile	Ala	Ala	Glu	Ala	Met	Arg
305				310						315					320
Gln	Ala	Tyr	Ala	Asp	Arg	Ser	Val	Tyr	Met	Gly	Asp	Ala	Asp	Phe	Val
			325						330					335	
Ser	Val	Pro	Val	Asp	Lys	Leu	Ile	Asn	Lys	Ala	Tyr	Ala	Lys	Lys	Ile
			340					345					350		
Phe	Asp	Thr	Ile	Gln	Pro	Asp	Thr	Val	Thr	Pro	Ser	Ser	Gln	I	

Tyr Gly Leu Val Gly Gly Asp Ala Asn Ala Ile Glu Ala Asn Lys Arg
 435 440 445
 Pro Leu Ser Ser Met Ser Pro Thr Ile Val Leu Lys Asn Asn Lys Val
 450 455 460
 Phe Leu Val Val Gly Ser Pro Gly Gly Ser Arg Ile Ile Thr Thr Val
 465 470 475 480
 Leu Gln Val Ile Ser Asn Val Ile Asp Tyr Asn Met Asn Ile Ser Glu
 485 490 495
 Ala Val Ser Ala Pro Arg Phe His Met Gln Trp Leu Pro Asp Glu Leu
 500 505 510
 Arg Ile Glu Lys Phe Gly Met Pro Ala Asp Val Lys Asp Asn Leu Thr
 515 520 525
 Lys Met Gly Tyr Gln Ile Val Thr Lys Pro Val Met Gly Asp Val Asn
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 <213> Helicobacter pylori

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 Met Gln Asn His Asp Leu Glu Ser Ile Lys Gln Ala
 1 5 10

 gct ttg att gaa tat gaa gtg aga gaa caa ggc tct agt att gtg cta 159
 Ala Leu Ile Glu Tyr Glu Val Arg Glu Gln Gly Ser Ser Ile Val Leu
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 gac agc aat att tcc aaa gag cct tta gag ttt att ata ggc act aat 207
 Asp Ser Asn Ile Ser Lys Glu Pro Leu Glu Phe Ile Ile Gly Thr Asn
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 caa atc ata gca ggg tta gaa aag gcg gta tta aag gct caa att ggc 255
 Gln Ile Ile Ala Gly Leu Glu Lys Ala Val Leu Lys Ala Gln Ile Gly
 45 50 55 60

 gag tgg gaa gag gtt gtc atc gcc cca gag gaa gct tat ggg gtt tat 303
 Glu Trp Glu Glu Val Val Ile Ala Pro Glu Glu Ala Tyr Gly Val Tyr
 65 70 75

 gaa agc agc tat ttg caa gaa gtc cct aga gat caa ttt gaa ggc att 351
 Glu Ser Ser Tyr Leu Gln Glu Val Pro Arg Asp Gln Phe Glu Gly Ile
 80 85 90

gaa tta gaa aaa ggc atg agc gtt ttt ggg caa act gaa gac aat caa 399
 Glu Leu Glu Lys Gly Met Ser Val Phe Gly Gln Thr Glu Asp Asn Gln
 95 100 105

acc att caa gcc att atc aaa gac ttt agc gct acg cat gtg atg gtg 447
 Thr Ile Gln Ala Ile Ile Lys Asp Phe Ser Ala Thr His Val Met Val
 110 115 120

gat tat aac cac ccg tta gcc ggg aaa act tta gcg ttt cgt ttc aag 495
 Asp Tyr Asn His Pro Leu Ala Gly Lys Thr Leu Ala Phe Arg Phe Lys
 125 130 135 140

gtt tta ggt ttt agg gaa gtg agc gaa gaa gaa att tta gct tca cac 543
 Val Leu Gly Phe Arg Glu Val Ser Glu Glu Glu Ile Leu Ala Ser His
 145 150 155

cat ggc ggt ggg aca ggt tgc tgt ggc ggt cat ggg ggt cat ggc gga 591
 His Gly Gly Gly Thr Gly Cys Cys Gly Gly His Gly Gly His Gly Gly
 160 165 170

aag aaa ggt ggg ggt tgt ggt tgc tca tgt tcg cat ggg tagtaaggta 640
 Lys Lys Gly Gly Gly Cys Gly Cys Ser Cys Ser His Gly
 175 180 185

taggagtatt taaaaggcaa ggcatgaat agttctaata tcaaaaattg gctattccct 700
 accatttgct tttttttat 719

<210> 142

<211> 185

<212> PRT

<213> *Helicobacter pylori*

<400> 142

Met Gln Asn His Asp Leu Glu Ser Ile Lys Gln Ala Ala Leu Ile Glu
 1 5 10 15
 Tyr Glu Val Arg Glu Gln Gly Ser Ser Ile Val Leu Asp Ser Asn Ile
 20 25 30
 Ser Lys Glu Pro Leu Glu Phe Ile Ile Gly Thr Asn Gln Ile Ile Ala
 35 40 45
 Gly Leu Glu Lys Ala Val Leu Lys Ala Gln Ile Gly Glu Trp Glu Glu
 50 55 60
 Val Val Ile Ala Pro Glu Glu Ala Tyr Gly Val Tyr Glu Ser Ser Tyr
 65 70 75 80
 Leu Gln Glu Val Pro Arg Asp Gln Phe Glu Gly Ile Glu Leu Glu Lys
 85 90 95
 Gly Met Ser Val Phe Gly Gln Thr Glu Asp Asn Gln Thr Ile Gln Ala
 100 105 110
 Ile Ile Lys Asp Phe Ser Ala Thr His Val Met Val Asp Tyr Asn His
 115 120 125
 Pro Leu Ala Gly Lys Thr Leu Ala Phe Arg Phe Lys Val Leu Gly Phe
 130 135 140
 Arg Glu Val Ser Glu Glu Glu Ile Leu Ala Ser His His Gly Gly Gly
 145 150 155 160
 Thr Gly Cys Cys Gly Gly His Gly Gly His Gly Gly Lys Lys Gly Gly
 165 170 175

Gly Cys Gly Cys Ser Cys Ser His Gly
 180 185

<210> 143
 <211> 339
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (1)...(336)

<400> 143
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 Ile Ser Ser Lys Arg Leu Glu Ile Ser Arg Leu Leu Glu Arg Lys Asn
 1 5 10 15
 gaa cgc agt ttt tta gcc gaa aaa tac cac aaa atc ccc aca aat aaa 96
 Glu Arg Ser Phe Leu Ala Glu Lys Tyr His Lys Ile Pro Thr Asn Lys
 20 25 30
 agg aaa ttt aaa gaa cgc tct ata ata tct gtt tgt gaa ata tcc aat 144
 Arg Lys Phe Lys Glu Arg Ser Ile Ile Ser Val Cys Glu Ile Ser Asn
 35 40 45
 cca gta gcg cac aaa ggg ctt aaa agg atc aaa aac cct aac acc att 192
 Pro Val Ala His Lys Gly Leu Lys Arg Ile Lys Asn Pro Asn Thr Ile
 50 55 60
 tta act aca aac att cat caa ctc cct aaa ccc ata gcc aca cgc ttg 240
 Leu Thr Thr Asn Ile His Gln Leu Pro Lys Pro Ile Ala Thr Arg Leu
 65 70 75 80
 ttt aac tcg tct tca aat acc ggc att tgc gct tgc aac tgc tct ttt 288
 Phe Asn Ser Ser Ser Asn Thr Gly Ile Cys Ala Cys Asn Cys Ser Phe
 85 90 95
 agc gct tgc ttt tca ttt tgt aat tgc ttc gca aac gct tca aac tct 336
 Ser Ala Cys Phe Ser Phe Cys Asn Cys Phe Ala Asn Ala Ser Asn Ser
 100 105 110
 tga 339

<210> 144
 <211> 112
 <212> PRT
 <213> Helicobacter pylori

<400> 144
 Ile Ser Ser Lys Arg Leu Glu Ile Ser Arg Leu Leu Glu Arg Lys Asn
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 Glu Arg Ser Phe Leu Ala Glu Lys Tyr His Lys Ile Pro Thr Asn Lys
 20 25 30
 Arg Lys Phe Lys Glu Arg Ser Ile Ile Ser Val Cys Glu Ile Ser Asn

35					40					45					
Pro	Val	Ala	His	Lys	Gly	Leu	Lys	Arg	Ile	Lys	Asn	Pro	Asn	Thr	Ile
50					55					60					
Leu	Thr	Thr	Asn	Ile	His	Gln	Leu	Pro	Lys	Pro	Ile	Ala	Thr	Arg	Leu
65					70					75					80
Phe	Asn	Ser	Ser	Ser	Asn	Thr	Gly	Ile	Cys	Ala	Cys	Asn	Cys	Ser	Phe
85					90					95					
Ser	Ala	Cys	Phe	Ser	Phe	Cys	Asn	Cys	Phe	Ala	Asn	Ala	Ser	Asn	Ser
100					105					110					

120	125	130	135	
ggg ata ggg gct ttt atc gcg ttt att ggc ctt aaa gaa atg cat atc				486
Gly Ile Gly Ala Phe Ile Ala Phe Ile Gly Leu Lys Glu Met His Ile	140	145	150	
gtc gtt acc cat aar gct acg ctt gta acc tta ggc gat ttt ggc gat				534
Val Val Thr His Lys Ala Thr Leu Val Thr Leu Gly Asp Phe Gly Asp	155	160	165	
ccg cat gtg tta ttg ggg gtt gtg ggg atc att cta act ttc gcg ctc				582
Pro His Val Leu Leu Gly Val Val Gly Ile Ile Leu Thr Phe Ala Leu	170	175	180	
tac acg ctc aaa atc agg ggt tct ttc att ata gcg gtc tta atc act				630
Tyr Thr Leu Lys Ile Arg Gly Ser Phe Ile Ile Ala Val Leu Ile Thr	185	190	195	
tcc att ctc gca tgg gtt tta aag cta gcc cct tac cct agc gag ttt				676
Ser Ile Leu Ala Trp Val Leu Lys Leu Ala Pro Tyr Pro Ser Glu Phe	200	205	210	215
ttt tcc atg ccc gct agc att ggc cct atc gcc ttt caa tta gac ttt				726
Phe Ser Met Pro Ala Ser Ile Gly Pro Ile Ala Phe Gln Leu Asp Phe	220	225	230	
aag ggc att ttt ttt gat gcg agt ggg gct ttc act tta gcg tta gtg				774
Lys Gly Ile Phe Phe Asp Ala Ser Gly Ala Phe Thr Leu Ala Leu Val	235	240	245	
cca gtt att atc act ttt ttt gta acc gat ttg ttt gat tct tta ggc				822
Pro Val Ile Ile Thr Phe Phe Val Thr Asp Leu Phe Asp Ser Leu Gly	250	255	260	
acg ctt gca ggg att ggc cac aag act gat ttt ttc aat gat gaa gaa				870
Thr Leu Ala Gly Ile Gly His Lys Thr Asp Phe Phe Asn Asp Glu Glu	265	270	275	
aaa aac aag gaa ttg gaa aag act ttg gaa gcg gat gcg gtg gct tct				918
Lys Asn Lys Glu Leu Glu Lys Thr Leu Glu Ala Asp Ala Val Ala Ser	280	285	290	295
tta ggg agc gcg gtg gtg ggc gtt tct act acg acc gct ttt ata gag				966
Leu Gly Ser Ala Val Val Gly Val Ser Thr Thr Thr Ala Phe Ile Glu	300	305	310	
agc gcg agt ggg gtt gaa gag ggg ggc cgc aca ggg ctt aca gcg gtt				1014
Ser Ala Ser Gly Val Glu Glu Gly Gly Arg Thr Gly Leu Thr Ala Val	315	320	325	
ttt acc gga tta ttt ttt gtt tta acg ctc ttt tgc ttg cct ctt tta				1062
Phe Thr Gly Leu Phe Phe Val Leu Thr Leu Phe Cys Leu Pro Leu Leu	330	335	340	
aaa gct att cct agc aat gcg att tat ccg gtg ctg gtg gta gta ggg				1110

Lys Ala Ile Pro Ser Asn Ala Ile Tyr Pro Val Leu Val Val Val Gly
 345 350 355
 gtt ttg atg ttt agc gtg tta gag ggg gtg aat ttt aaa gac atg gcc 1158
 Val Leu Met Phe Ser Val Leu Glu Gly Val Asn Phe Lys Asp Met Ala
 360 365 370 375
 att agc gtt tcc act ttt tta acc gtg gtg atg atg ccc tta acc ttc 1206
 Ile Ser Val Ser Thr Phe Leu Thr Val Val Met Met Pro Leu Thr Phe
 380 385 390
 tcc att gcc gat ggc tta gcc ttt ggc ttt ttg tct tat agt atc atc 1254
 Ser Ile Ala Asp Gly Leu Ala Phe Gly Phe Leu Ser Tyr Ser Ile Ile
 395 400 405
 aaa ttg gtt caa aaa gac ttc aaa gca ctc aat tca ggc att atc att 1302
 Lys Leu Val Gln Lys Asp Phe Lys Ala Leu Asn Ser Gly Ile Ile Ile
 410 415 420
 ctc tgc atc att tct gtt tct gta ttt atc ttt cgt taagctcttt 1348
 Leu Cys Ile Ile Ser Val Ser Val Phe Ile Phe Arg
 425 430 435
 ttaaggggct ttgcattttt tactcatttc atgcctcttt ttctttatatt agacagatta 1408
 ttatcttaaa ataattgtaa tatcattatt at 1440

<210> 146
 <211> 435
 <212> PRT
 <213> Helicobacter pylori

<220>
 <221> VARIANT
 <222> 156
 <223> Xaa = Any Amino Acid

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 Phe Arg Ala Gly Leu Thr Thr Phe Ile Thr Met Ile Tyr Ile Val Pro
 20 25 30
 Leu Asn Ala Leu Ile Leu Ser Gln Ala Asn Met Pro Tyr Glu Ala Leu
 35 40 45
 Leu Ser Ala Thr Ala Ile Ile Thr Ile Leu Ser Ser Val Phe Asn Gly
 50 55 60
 Leu Trp Ala Asn Thr Pro Ile Ala Met Ser Val Gly Leu Gly Leu Ser
 65 70 75 80
 Ala Tyr Phe Ser Phe Gly Leu Val Gln Gly Leu Lys Leu Pro Trp Gln
 85 90 95
 Ser Ala Leu Gly Ile Val Ala Leu Ser Gly Ala Ile Phe Val Ile Leu
 100 105 110
 Ser Phe Thr Lys Phe Arg Ser Trp Val Met Arg Ser Ile Pro Ser Asp
 115 120 125
 Leu Arg Arg Ala Val Ser Ala Gly Ile Gly Ala Phe Ile Ala Phe Ile
 130 135 140

Gly	Leu	Lys	Glu	Met	His	Ile	Val	Val	Thr	His	Xaa	Ala	Thr	Leu	Val
145					150					155					160
Thr	Leu	Gly	Asp	Phe	Gly	Asp	Pro	His	Val	Leu	Leu	Gly	Val	Val	Gly
				165					170						175
Ile	Ile	Leu	Thr	Phe	Ala	Leu	Tyr	Thr	Leu	Lys	Ile	Arg	Gly	Ser	Phe
			180					185					190		
Ile	Ile	Ala	Val	Leu	Ile	Thr	Ser	Ile	Leu	Ala	Trp	Val	Leu	Lys	Leu
		195					200					205			
Ala	Pro	Tyr	Pro	Ser	Glu	Phe	Phe	Ser	Met	Pro	Ala	Ser	Ile	Gly	Pro
	210					215					220				
Ile	Ala	Phe	Gln	Leu	Asp	Phe	Lys	Gly	Ile	Phe	Phe	Asp	Ala	Ser	Gly
225					230					235					240
Ala	Phe	Thr	Leu	Ala	Leu	Val	Pro	Val	Ile	Ile	Thr	Phe	Phe	Val	Thr
				245					250						255
Asp	Leu	Phe	Asp	Ser	Leu	Gly	Thr	Leu	Ala	Gly	Ile	Gly	His	Lys	Thr
			260					265					270		
Asp	Phe	Phe	Asn	Asp	Glu	Glu	Lys	Asn	Lys	Glu	Leu	Glu	Lys	Thr	Leu
		275					280					285			
Glu	Ala	Asp	Ala	Val	Ala	Ser	Leu	Gly	Ser	Ala	Val	Val	Gly	Val	Ser
	290					295					300				
Thr	Thr	Thr	Ala	Phe	Ile	Glu	Ser	Ala	Ser	Gly	Val	Glu	Glu	Gly	Gly
305					310					315					320
Arg	Thr	Gly	Leu	Thr	Ala	Val	Phe	Thr	Gly	Leu	Phe	Phe	Val	Leu	Thr
				325					330						335
Leu	Phe	Cys	Leu	Pro	Leu	Leu	Lys	Ala	Ile	Pro	Ser	Asn	Ala	Ile	Tyr
		340						345					350		
Pro	Val	Leu	Val	Val	Val	Gly	Val	Leu	Met	Phe	Ser	Val	Leu	Glu	Gly
		355					360					365			
Val	Asn	Phe	Lys	Asp	Met	Ala	Ile	Ser	Val	Ser	Thr	Phe	Leu	Thr	Val
	370					375					380				
Val	Met	Met	Pro	Leu	Thr	Phe	Ser	Ile	Ala	Asp	Gly	Leu	Ala	Phe	Gly
385					390					395					400
Phe	Leu	Ser	Tyr	Ser	Ile	Ile	Lys	Leu	Val	Gln	Lys	Asp	Phe	Lys	Ala
				405				410					415		
Leu	Asn	Ser	Gly	Ile	Ile	Ile	Leu	Cys	Ile	Ile	Ser	Val	Ser	Val	Phe
			420					425					430		
Ile	Phe	Arg													
		435													

<210> 147

<211> 843

<212> DNA

<213> *Helicobacter pylori*

<220>

<221> CDS

<222> (66)...(764)

<400> 147

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caacc atg acc cct cac atc aac gcc aaa atc ggc gat ttt tat cct caa 110
  Met Thr Pro His Ile Asn Ala Lys Ile Gly Asp Phe Tyr Pro Gln
    1                   5                   10                   15

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tgc ctt tta tgc ggc gat ccc tta agg gtg agc tac att gca aaa aaa	158
Cys Leu Leu Cys Gly Asp Pro Leu Arg Val Ser Tyr Ile Ala Lys Lys	
20 25 30	
ttc tta caa gac gcc aaa gag atc acg aat gtg cgt aac atg cta ggc	206
Phe Leu Gln Asp Ala Lys Glu Ile Thr Asn Val Arg Asn Met Leu Gly	
35 40 45	
ttt agc ggg aag tat aag ggt agg ggg att tct tta atg ggg cat ggc	254
Phe Ser Gly Lys Tyr Lys Gly Arg Gly Ile Ser Leu Met Gly His Gly	
50 55 60	
atg ggc att gcg tca tgc acg att tat gta acc gaa ctc att aaa acc	302
Met Gly Ile Ala Ser Cys Thr Ile Tyr Val Thr Glu Leu Ile Lys Thr	
65 70 75	
tat cag gtt aaa gag ctt tta agg att ggc act tgc ggg gcg att agc	350
Tyr Gln Val Lys Glu Leu Leu Arg Ile Gly Thr Cys Gly Ala Ile Ser	
80 85 90 95	
cca aaa gtt ggc ctg aaa gac att atc atg gcg acg ggg gct tca acg	398
Pro Lys Val Gly Leu Lys Asp Ile Ile Met Ala Thr Gly Ala Ser Thr	
100 105 110	
gat tct aaa acc aat cgg gtg cgt ttt tta aac cac gat ttg agc gca	446
Asp Ser Lys Thr Asn Arg Val Arg Phe Leu Asn His Asp Leu Ser Ala	
115 120 125	
acg cct gat ttt gaa ttg agt tta aga gcg tat caa aca gca aag cgt	494
Thr Pro Asp Phe Glu Leu Ser Leu Arg Ala Tyr Gln Thr Ala Lys Arg	
130 135 140	
ttg ggt att gat ttg aaa gtg ggc aat gtt ttt tca agc gat ttt ttc	542
Leu Gly Ile Asp Leu Lys Val Gly Asn Val Phe Ser Ser Asp Phe Phe	
145 150 155	
tat tct ttt gaa acg cat gcc ttt gat tta atg gct aaa tac aac cac	590
Tyr Ser Phe Glu Thr His Ala Phe Asp Leu Met Ala Lys Tyr Asn His	
160 165 170 175	
ttg gct att gaa atg gaa gcg gcg ggg tta tac gcc acg gcg atg gaa	638
Leu Ala Ile Glu Met Glu Ala Ala Gly Leu Tyr Ala Thr Ala Met Glu	
180 185 190	
cta aac gct aag gct tta tgc tta tgc tca gtc tca gat cac tta atc	686
Leu Asn Ala Lys Ala Leu Cys Leu Cys Ser Val Ser Asp His Leu Ile	
195 200 205	
act aaa gaa gcc tta agc cct aaa gaa agg gta gaa agc ttt gat aac	734
Thr Lys Glu Ala Leu Ser Pro Lys Glu Arg Val Glu Ser Phe Asp Asn	
210 215 220	
atg ata att ttg gct ttg gag atg atg agt tagccttttt tgcccccata	784
Met Ile Ile Leu Ala Leu Glu Met Met Ser	
225 230	

agttaaggat aaaattttaa ggaaaaccct taaagctaaa agccttaagg gaactttgg 843

<210> 148

<211> 233

<212> PRT

<213> Helicobacter pylori

<400> 148

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			20					25					30		
Leu	Gln	Asp	Ala	Lys	Glu	Ile	Thr	Asn	Val	Arg	Asn	Met	Leu	Gly	Phe
		35					40					45			
Ser	Gly	Lys	Tyr	Lys	Gly	Arg	Gly	Ile	Ser	Leu	Met	Gly	His	Gly	Met
	50					55					60				
Gly	Ile	Ala	Ser	Cys	Thr	Ile	Tyr	Val	Thr	Glu	Leu	Ile	Lys	Thr	Tyr
65					70					75				80	
Gln	Val	Lys	Glu	Leu	Leu	Arg	Ile	Gly	Thr	Cys	Gly	Ala	Ile	Ser	Pro
			85					90					95		
Lys	Val	Gly	Leu	Lys	Asp	Ile	Ile	Met	Ala	Thr	Gly	Ala	Ser	Thr	Asp
			100					105					110		
Ser	Lys	Thr	Asn	Arg	Val	Arg	Phe	Leu	Asn	His	Asp	Leu	Ser	Ala	Thr
		115					120					125			
Pro	Asp	Phe	Glu	Leu	Ser	Leu	Arg	Ala	Tyr	Gln	Thr	Ala	Lys	Arg	Leu
	130					135					140				
Gly	Ile	Asp	Leu	Lys	Val	Gly	Asn	Val	Phe	Ser	Ser	Asp	Phe	Phe	Tyr
145				150						155				160	
Ser	Phe	Glu	Thr	His	Ala	Phe	Asp	Leu	Met	Ala	Lys	Tyr	Asn	His	Leu
			165					170					175		
Ala	Ile	Glu	Met	Glu	Ala	Ala	Gly	Leu	Tyr	Ala	Thr	Ala	Met	Glu	Leu
		180						185					190		
Asn	Ala	Lys	Ala	Leu	Cys	Leu	Cys	Ser	Val	Ser	Asp	His	Leu	Ile	Thr
	195					200					205				
Lys	Glu	Ala	Leu	Ser	Pro	Lys	Glu	Arg	Val	Glu	Ser	Phe	Asp	Asn	Met
	210					215					220				
Ile	Ile	Leu	Ala	Leu	Glu	Met	Met	Ser							
225						230									

<210> 149

<211> 1440

<212> DNA

<213> Helicobacter pylori

<220>

<221> CDS

<222> (79)...(1407)

<400> 149

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tcttgtaaaa	taaccgcg	atg ttt aag aaa att ttt cca tta gcg tta gtg				111
		Met Phe Lys Lys Ile Phe Pro Leu Ala Leu Val				
	1		5		10	

tca tcg ttg cgg ttt ttg ggg ctt ttt att gtt ttg ccg gtc att agt	159
Ser Ser Leu Arg Phe Leu Gly Leu Phe Ile Val Leu Pro Val Ile Ser	
15 20 25	
ttg tat gcg gat agt ttc cat tca agc agt ccc tta ctc gtg ggg ttg	207
Leu Tyr Ala Asp Ser Phe His Ser Ser Ser Pro Leu Leu Val Gly Leu	
30 35 40	
gct gtg ggc gga gcg tat ctt acg caa att gtt ttt caa acc ccc atg	255
Ala Val Gly Gly Ala Tyr Leu Thr Gln Ile Val Phe Gln Thr Pro Met	
45 50 55	
ggc att ctt agc gat aag ata ggc cgt aaa gtg gtg gtt atg gtg tgc	303
Gly Ile Leu Ser Asp Lys Ile Gly Arg Lys Val Val Val Met Val Cys	
60 65 70 75	
ttg ctg ttg ttt tta gcc ggc tcg tta gtg tgc ttt ata gcg aat gat	351
Leu Leu Leu Phe Leu Ala Gly Ser Leu Val Cys Phe Ile Ala Asn Asp	
80 85 90	
att gtt tgg ctc gtt ata ggg cgc ttc att caa ggc atg ggg gct tta	399
Ile Val Trp Leu Val Ile Gly Arg Phe Ile Gln Gly Met Gly Ala Leu	
95 100 105	
ggg ggg gtt att agt gcg atg gtg gcg gat gaa gtg aaa gaa gaa gag	447
Gly Gly Val Ile Ser Ala Met Val Ala Asp Glu Val Lys Glu Glu Glu	
110 115 120	
cgc acc aaa gcc atg gcc atc atg gga gcg ttt att ttc att agc ttc	495
Arg Thr Lys Ala Met Ala Ile Met Gly Ala Phe Ile Phe Ile Ser Phe	
125 130 135	
act ata agc atg gcg att ggc cct ggg gtt gta gcg ttt ttg ggg ggg	543
Thr Ile Ser Met Ala Ile Gly Pro Gly Val Val Ala Phe Leu Gly Gly	
140 145 150 155	
gca aaa tgg ctc ttt tta ctc acg gcg atc tta act tta ttg agt tta	591
Ala Lys Trp Leu Phe Leu Leu Thr Ala Ile Leu Thr Leu Leu Ser Leu	
160 165 170	
ttg atg ctt tta aaa gtc aaa gac gcc cct aaa att tct tac cag atc	639
Leu Met Leu Leu Lys Val Lys Asp Ala Pro Lys Ile Ser Tyr Gln Ile	
175 180 185	
aaa aac ata aaa gct tac caa ccc aac tct aaa gcc ttg tat ctt ttg	687
Lys Asn Ile Lys Ala Tyr Gln Pro Asn Ser Lys Ala Leu Tyr Leu Leu	
190 195 200	
tat cta agc tct ttt ttt gaa aaa gcg ttc atg acg ctt att ttt gtg	735
Tyr Leu Ser Ser Phe Phe Glu Lys Ala Phe Met Thr Leu Ile Phe Val	
205 210 215	
ctg atc cct tta gcc tta gtg aat gaa ttt cat aaa gat gaa agc ttt	783
Leu Ile Pro Leu Ala Leu Val Asn Glu Phe His Lys Asp Glu Ser Phe	

220	225	230	235	
tta atc ttg gtg tat	gtg cct gga gcc tta	tta tta ggg gtc tta	agc atg	831
Leu Ile Leu Val Tyr	Val Pro Gly Ala Leu	Leu Leu Gly Val Leu	Ser Met	
	240	245	250	
gga ata gcg agc gtt	atg gct gaa aaa tac	aac aag cct aaa gga	gtg	879
Gly Ile Ala Ser Val	Met Ala Glu Lys Tyr	Asn Lys Pro Lys Gly	Val	
	255	260	265	
atg ctt tct ggc gta	tta ttg ttt att gtg	agt tat ttg tgc ttg	ttt	927
Met Leu Ser Gly Val	Leu Leu Phe Ile Val	Ser Tyr Leu Cys Leu	Phe	
	270	275	280	
tta gcc gac tct agc	ttt tta ggg aaa tat	tta tgg ctt ttt att	gtt	975
Leu Ala Asp Ser Ser	Phe Leu Gly Lys Tyr	Leu Trp Leu Phe Ile	Val	
	285	290	295	
ggg gtg ggg ttt ttc	ttt att ggt ttt gcc	acc tta gag cct atc	atg	1023
Gly Val Ala Phe Phe	Phe Ile Gly Phe Ala	Thr Leu Glu Pro Ile	Met	
300	305	310	315	
caa tct tta gcg tct	aaa ttc gcc aaa gtg	cat gaa aaa ggc aag	gtt	1071
Gln Ser Leu Ala Ser	Lys Phe Ala Lys Val	His Glu Lys Gly Lys	Val	
	320	325	330	
tta ggg caa ttc act	act ttt ggc tat tta	ggg agc ttt gtt ggg	ggc	1119
Leu Gly Gln Phe Thr	Thr Phe Gly Tyr Leu	Gly Ser Phe Val Gly	Gly	
	335	340	345	
gtg agc ggg ggg ttg	agc tac cat cat tta	ggc gtt tct aac aca	agc	1167
Val Ser Gly Gly Leu	Ser Tyr His His Leu	Gly Val Ser Asn Thr	Ser	
	350	355	360	
ttg atc gtt gta gct	tta ggg ctt att tgg	ggg cta tcg ctc ttt	tta	1215
Leu Ile Val Val Ala	Leu Gly Leu Ile Trp	Gly Leu Ser Leu Phe	Leu	
	365	370	375	
ctc aac aac cct tcc	aag caa aaa aat gtc	tat ttc ccc tta gac	gct	1263
Leu Asn Asn Pro Ser	Lys Gln Lys Asn Val	Tyr Phe Pro Leu Asp	Ala	
380	385	390	395	
tac aat gag gaa caa	ttt gaa act tta gag	gat aaa atc att gaa	tgg	1311
Tyr Asn Glu Glu Gln	Phe Glu Thr Leu Glu	Asp Lys Ile Ile Glu	Trp	
	400	405	410	
tat gtt aat att agc	gaa gaa atc att att	gtg aaa tat aat tcc	gat	1359
Tyr Val Asn Ile Ser	Glu Glu Ile Ile Ile	Val Lys Tyr Asn Ser	Asp	
	415	420	425	
cac att agc gaa gaa	gaa atc att cac tta	gcg caa aac ttt aga	aaa	1407
His Ile Ser Glu Glu	Glu Ile Ile His Leu	Ala Gln Asn Phe Arg	Lys	
	430	435	440	
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<210> 150
 <211> 443
 <212> PRT
 <213> Helicobacter pylori

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 Phe His Ser Ser Ser Pro Leu Leu Val Gly Leu Ala Val Gly Gly Ala
 35 40 45
 Tyr Leu Thr Gln Ile Val Phe Gln Thr Pro Met Gly Ile Leu Ser Asp
 50 55 60
 Lys Ile Gly Arg Lys Val Val Val Met Val Cys Leu Leu Leu Phe Leu
 65 70 75 80
 Ala Gly Ser Leu Val Cys Phe Ile Ala Asn Asp Ile Val Trp Leu Val
 85 90 95
 Ile Gly Arg Phe Ile Gln Gly Met Gly Ala Leu Gly Gly Val Ile Ser
 100 105 110
 Ala Met Val Ala Asp Glu Val Lys Glu Glu Glu Arg Thr Lys Ala Met
 115 120 125
 Ala Ile Met Gly Ala Phe Ile Phe Ile Ser Phe Thr Ile Ser Met Ala
 130 135 140
 Ile Gly Pro Gly Val Val Ala Phe Leu Gly Gly Ala Lys Trp Leu Phe
 145 150 155 160
 Leu Leu Thr Ala Ile Leu Thr Leu Leu Ser Leu Leu Met Leu Leu Lys
 165 170 175
 Val Lys Asp Ala Pro Lys Ile Ser Tyr Gln Ile Lys Asn Ile Lys Ala
 180 185 190
 Tyr Gln Pro Asn Ser Lys Ala Leu Tyr Leu Leu Tyr Leu Ser Ser Phe
 195 200 205
 Phe Glu Lys Ala Phe Met Thr Leu Ile Phe Val Leu Ile Pro Leu Ala
 210 215 220
 Leu Val Asn Glu Phe His Lys Asp Glu Ser Phe Leu Ile Leu Val Tyr
 225 230 235 240
 Val Pro Gly Ala Leu Leu Gly Val Leu Ser Met Gly Ile Ala Ser Val
 245 250 255
 Met Ala Glu Lys Tyr Asn Lys Pro Lys Gly Val Met Leu Ser Gly Val
 260 265 270
 Leu Leu Phe Ile Val Ser Tyr Leu Cys Leu Phe Leu Ala Asp Ser Ser
 275 280 285
 Phe Leu Gly Lys Tyr Leu Trp Leu Phe Ile Val Gly Val Ala Phe Phe
 290 295 300
 Phe Ile Gly Phe Ala Thr Leu Glu Pro Ile Met Gln Ser Leu Ala Ser
 305 310 315 320
 Lys Phe Ala Lys Val His Glu Lys Gly Lys Val Leu Gly Gln Phe Thr
 325 330 335
 Thr Phe Gly Tyr Leu Gly Ser Phe Val Gly Gly Val Ser Gly Gly Leu
 340 345 350
 Ser Tyr His His Leu Gly Val Ser Asn Thr Ser Leu Ile Val Val Ala
 355 360 365
 Leu Gly Leu Ile Trp Gly Leu Ser Leu Phe Leu Leu Asn Asn Pro Ser
 370 375 380
 Lys Gln Lys Asn Val Tyr Phe Pro Leu Asp Ala Tyr Asn Glu Glu Gln

385		390		395		400									
Phe	Glu	Thr	Leu	Glu	Asp	Lys	Ile	Ile	Glu	Trp	Tyr	Val	Asn	Ile	Ser
				405					410					415	
Glu	Glu	Ile	Ile	Ile	Val	Lys	Tyr	Asn	Ser	Asp	His	Ile	Ser	Glu	Glu
			420					425					430		
Glu	Ile	Ile	His	Leu	Ala	Gln	Asn	Phe	Arg	Lys					
		435					440								

<210> 151
 <211> 1360
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (89)...(1237)

<400> 151
 gaaatcaaaa aaggggtttt taccacttat aaagagaaaa accctatcgc tttgaaaact 60
 taaccaataa ataaggtaaa attaagac atg cat gca gaa ttt ttc act ttc 112
 Met His Ala Glu Phe Phe Thr Phe
 1 5

gcg ctc atc atg ctt tta att gtg atg gcc cct tat atg tct aga atc 160
 Ala Leu Ile Met Leu Leu Ile Val Met Ala Pro Tyr Met Ser Arg Ile
 10 15 20

tct cgt ttg cct atc acg gtt gtg gag att tta ttt gga tct gtt ggg 208
 Ser Arg Leu Pro Ile Thr Val Val Glu Ile Leu Phe Gly Ser Val Gly
 25 30 35 40

gcg tat gtg ggt ttt att gag cct act aag ggc ttt gaa atc atg tcc 256
 Ala Tyr Val Gly Phe Ile Glu Pro Thr Lys Gly Phe Glu Ile Met Ser
 45 50 55

gaa att ggc ttt ttg ttt tta atg ttt tta tgc ggt ttg gaa gtg gag 304
 Glu Ile Gly Phe Leu Phe Leu Met Phe Leu Cys Gly Leu Glu Val Glu
 60 65 70

att tat ctg ttc aaa aaa tta ggg gtt tct ctt tta aaa cgc att ttt 352
 Ile Tyr Leu Phe Lys Lys Leu Gly Val Ser Leu Leu Lys Arg Ile Phe
 75 80 85

gct tat ctg ttg att tta tac acg ctt tcg ttt att ctt act ttt agc 400
 Ala Tyr Leu Leu Ile Leu Tyr Thr Leu Ser Phe Ile Leu Thr Phe Ser
 90 95 100

ctt aat tta gag cct att ttt atg gtg att ttc cct att att agt ttg 448
 Leu Asn Leu Glu Pro Ile Phe Met Val Ile Phe Pro Ile Ile Ser Leu
 105 110 115 120

ggc atg atc atg act tta gtc aaa gat tat cgt aaa gag att ttg tgg 496
 Gly Met Ile Met Thr Leu Val Lys Asp Tyr Arg Lys Glu Ile Leu Trp
 125 130 135

ctt gat ttg gtt ttg aaa gtg ggc gtt att ggg gaa ttg tta agc att	544
Leu Asp Leu Val Leu Lys Val Gly Val Ile Gly Glu Leu Leu Ser Ile	
140 145 150	
ttt ggt ttg gtg gtc gtg gat ggg gtg tat tcg cat ggt ttg ggc atg	592
Phe Gly Leu Val Val Val Asp Gly Val Tyr Ser His Gly Leu Gly Met	
155 160 165	
gat ttg att aaa gat tta ggc att ctc att gtt ttt tta atc tta att	640
Asp Leu Ile Lys Asp Leu Gly Ile Leu Ile Val Phe Leu Ile Leu Ile	
170 175 180	
atc gtg gcg ttt caa atc ttt aag act ttg ttt tgg tgg ttc ccg cat	688
Ile Val Ala Phe Gln Ile Phe Lys Thr Leu Phe Trp Trp Phe Pro His	
185 190 195 200	
tta aag ctt ttt gtg atg cct aaa agc agt cag ttt aac caa gat gtg	736
Leu Lys Leu Phe Val Met Pro Lys Ser Ser Gln Phe Asn Gln Asp Val	
205 210 215	
cgt ttt tcg ctc atg ctc ttt ttt tcc tta gtt gcg atc gtg gtg tgg	784
Arg Phe Ser Leu Met Leu Phe Phe Ser Leu Val Ala Ile Val Val Trp	
220 225 230	
ctc aaa ata gaa atg gtt tta ggg gcg ttt cta gca ggg tta gtc gtt	832
Leu Lys Ile Glu Met Val Leu Gly Ala Phe Leu Ala Gly Leu Val Val	
235 240 245	
tct act ttt ttc cct cat aaa tca gaa ttg atc cac aag ctc aat gat	880
Ser Thr Phe Phe Pro His Lys Ser Glu Leu Ile His Lys Leu Asn Asp	
250 255 260	
gtg ggt ttt ggg ttt ttt gtg cct ttg ttt ttc atc cat gta ggc tct	928
Val Gly Phe Gly Phe Phe Val Pro Leu Phe Phe Ile His Val Gly Ser	
265 270 275 280	
act tta gac tta aaa tta gtg ttt tta aac ccg cat ttg att ctc caa	976
Thr Leu Asp Leu Lys Leu Val Phe Leu Asn Pro His Leu Ile Leu Gln	
285 290 295	
ggg ata ttg att gtc ata gcg atg ttg agt ttg cac ttg atc act tca	1024
Gly Ile Leu Ile Val Ile Ala Met Leu Ser Leu His Leu Ile Thr Ser	
300 305 310	
acc tta ttg tgg cgc aaa tac ttt aaa gag gct aag cat tta ttt tca	1072
Thr Leu Leu Trp Arg Lys Tyr Phe Lys Glu Ala Lys His Leu Phe Ser	
315 320 325	
ttc gct tta ggg gct tct atg cct tta act ttt tta gta acc acc gca	1120
Phe Ala Leu Gly Ala Ser Met Pro Leu Thr Phe Leu Val Thr Thr Ala	
330 335 340	
gca gta ggc tta aaa gcg caa gcg atc tca caa aac acc tac tac gca	1168
Ala Val Gly Leu Lys Ala Gln Ala Ile Ser Gln Asn Thr Tyr Tyr Ala	

345 350 355 360
 ttg ctc atg gcg gct att ttt gaa ggg gta tta ttc acg att gcg atc 1216
 Leu Leu Met Ala Ala Ile Phe Glu Gly Val Leu Phe Thr Ile Ala Ile
 365 370 375

 aaa ata ctc aac aaa aaa gct tgaatgaaag cttaagcgctc taaatatttta 1267
 Lys Ile Leu Asn Lys Lys Ala
 380

 gcgtcgctaa agctgttcgc ttgaacatta ttgaacgcat tctctaagct atcaaagaaa 1327
 cgagggtgca agtttttgcat ttcttttaag aaa 1360

 <210> 152
 <211> 383
 <212> PRT
 <213> Helicobacter pylori

 <400> 152
 Met His Ala Glu Phe Phe Thr Phe Ala Leu Ile Met Leu Leu Ile Val
 1 5 10 15
 Met Ala Pro Tyr Met Ser Arg Ile Ser Arg Leu Pro Ile Thr Val Val
 20 25 30
 Glu Ile Leu Phe Gly Ser Val Gly Ala Tyr Val Gly Phe Ile Glu Pro
 35 40 45
 Thr Lys Gly Phe Glu Ile Met Ser Glu Ile Gly Phe Leu Phe Leu Met
 50 55 60
 Phe Leu Cys Gly Leu Glu Val Glu Ile Tyr Leu Phe Lys Lys Leu Gly
 65 70 75 80
 Val Ser Leu Leu Lys Arg Ile Phe Ala Tyr Leu Leu Ile Leu Tyr Thr
 85 90 95
 Leu Ser Phe Ile Leu Thr Phe Ser Leu Asn Leu Glu Pro Ile Phe Met
 100 105 110
 Val Ile Phe Pro Ile Ile Ser Leu Gly Met Ile Met Thr Leu Val Lys
 115 120 125
 Asp Tyr Arg Lys Glu Ile Leu Trp Leu Asp Leu Val Leu Lys Val Gly
 130 135 140
 Val Ile Gly Glu Leu Leu Ser Ile Phe Gly Leu Val Val Val Asp Gly
 145 150 155 160
 Val Tyr Ser His Gly Leu Gly Met Asp Leu Ile Lys Asp Leu Gly Ile
 165 170 175
 Leu Ile Val Phe Leu Ile Leu Ile Ile Val Ala Phe Gln Ile Phe Lys
 180 185 190
 Thr Leu Phe Trp Trp Phe Pro His Leu Lys Leu Phe Val Met Pro Lys
 195 200 205
 Ser Ser Gln Phe Asn Gln Asp Val Arg Phe Ser Leu Met Leu Phe Phe
 210 215 220
 Ser Leu Val Ala Ile Val Val Trp Leu Lys Ile Glu Met Val Leu Gly
 225 230 235 240
 Ala Phe Leu Ala Gly Leu Val Val Ser Thr Phe Phe Pro His Lys Ser
 245 250 255
 Glu Leu Ile His Lys Leu Asn Asp Val Gly Phe Gly Phe Phe Val Pro
 260 265 270
 Leu Phe Phe Ile His Val Gly Ser Thr Leu Asp Leu Lys Leu Val Phe
 275 280 285

Leu	Asn	Pro	His	Leu	Ile	Leu	Gln	Gly	Ile	Leu	Ile	Val	Ile	Ala	Met
290						295				300					
Leu	Ser	Leu	His	Leu	Ile	Thr	Ser	Thr	Leu	Leu	Trp	Arg	Lys	Tyr	Phe
305					310				315						320
Lys	Glu	Ala	Lys	His	Leu	Phe	Ser	Phe	Ala	Leu	Gly	Ala	Ser	Met	Pro
			325					330						335	
Leu	Thr	Phe	Leu	Val	Thr	Thr	Ala	Ala	Val	Gly	Leu	Lys	Ala	Gln	Ala
		340					345					350			
Ile	Ser	Gln	Asn	Thr	Tyr	Tyr	Ala	Leu	Leu	Met	Ala	Ala	Ile	Phe	Glu
	355						360				365				
Gly	Val	Leu	Phe	Thr	Ile	Ala	Ile	Lys	Ile	Leu	Asn	Lys	Lys	Ala	
370					375					380					

<210> 153
 <211> 1024
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (115)...(921)

<400> 153
 agttggcaaa aacgcagaga cagtaacgca aaggcaaata aagagactca ttttaaaca 60
 gcgaatgccca ttacaaatat aatcagatca gttggtgggt tttttacaaa gatt atg 117
 Met
 1

aag aga gtt aga gaa ctt gta aaa aaa cat ccc gag aaa agc agt gtg 165
 Lys Arg Val Arg Glu Leu Val Lys Lys His Pro Glu Lys Ser Ser Val
 5 10 15

gca tta gta gta tta acc cat gct gca tgc aag aaa gcg aaa gaa ttg 213
 Ala Leu Val Val Leu Thr His Ala Ala Cys Lys Lys Ala Lys Glu Leu
 20 25 30

gac gat aaa gtc cag gat aaa tcc aaa caa gct gaa aaa gaa aat caa 261
 Asp Asp Lys Val Gln Asp Lys Ser Lys Gln Ala Glu Lys Glu Asn Gln
 35 40 45

atc aat tgg tgg aaa tat tca gga tta aca ata gcg aca agt tta tta 309
 Ile Asn Trp Trp Lys Tyr Ser Gly Leu Thr Ile Ala Thr Ser Leu Leu
 50 55 60 65

tta gcc gct tgt agt gtt ggt gat att gat aaa cag ata gag tta gaa 357
 Leu Ala Ala Cys Ser Val Gly Asp Ile Asp Lys Gln Ile Glu Leu Glu
 70 75 80

caa gaa aaa aag gaa gct gaa aac gct agg gat aga gcg aac aag agt 405
 Gln Glu Lys Lys Glu Ala Glu Asn Ala Arg Asp Arg Ala Asn Lys Ser
 85 90 95

ggg ata gaa ctg gaa cag gaa aaa caa aag acc att aaa gaa caa aaa 453
 Gly Ile Glu Leu Glu Gln Glu Lys Gln Lys Thr Ile Lys Glu Gln Lys

100	105	110	
gat tta gtt aaa aaa gca gaa caa aat tgc caa gaa aat cat ggc caa			501
Asp Leu Val Lys Lys Ala Glu Gln Asn Cys Gln Glu Asn His Gly Gln			
115	120	125	
ttc ttt atg aaa aaa tta gga att aag ggt ggc att gct ata gaa gta			549
Phe Phe Met Lys Lys Leu Gly Ile Lys Gly Gly Ile Ala Ile Glu Val			
130	135	140	145
gaa gct gaa tgc aaa acc cct aaa cct gca aaa acc aat caa acc cct			597
Glu Ala Glu Cys Lys Thr Pro Lys Pro Ala Lys Thr Asn Gln Thr Pro			
150	155	160	
atc cag cca aaa cac ctc ccc aac tct aaa caa ccc cac tct caa aga			645
Ile Gln Pro Lys His Leu Pro Asn Ser Lys Gln Pro His Ser Gln Arg			
165	170	175	
gga tca aaa gcg caa gag ctt atc gct tat ttg caa aaa gag tta gaa			693
Gly Ser Lys Ala Gln Glu Leu Ile Ala Tyr Leu Gln Lys Glu Leu Glu			
180	185	190	
tct ctg ccc tat tca caa aaa gct atc gct aaa caa gtg aat ttt tac			741
Ser Leu Pro Tyr Ser Gln Lys Ala Ile Ala Lys Gln Val Asn Phe Tyr			
195	200	205	
agg cca agt tct gtc gct tat tta gaa cta gac cct aga gat ttt aag			789
Arg Pro Ser Ser Val Ala Tyr Leu Glu Leu Asp Pro Arg Asp Phe Lys			
210	215	220	225
gtt aca gaa gaa tgg caa aaa gaa aat cta aaa ata cgc tct aaa gct			837
Val Thr Glu Glu Trp Gln Lys Glu Asn Leu Lys Ile Arg Ser Lys Ala			
230	235	240	
caa gct aaa atg ctt gga aat gag aaa ccc aca agc cca cct ttc aac			885
Gln Ala Lys Met Leu Gly Asn Glu Lys Pro Thr Ser Pro Pro Phe Asn			
245	250	255	
ctc tca aag cct ttt gtt cgt tca aaa aat att tgc tgatgttaat			931
Leu Ser Lys Pro Phe Val Arg Ser Lys Asn Ile Cys			
260	265		
aaagaaatag aagcagttgc taatactgaa aagaaagcag aaaaagmggg ttatggttat			991
agtaaaagga tgtaggcata agaaaataag aac			1024
<210> 154			
<211> 269			
<212> PRT			
<213> Helicobacter pylori			
<400> 154			
Met Lys Arg Val Arg Glu Leu Val Lys Lys His Pro Glu Lys Ser Ser			
1 5 10 15			
Val Ala Leu Val Val Leu Thr His Ala Ala Cys Lys Lys Ala Lys Glu			
20 25 30			

Ile Ala Gly Ser Met Ala Phe Lys Glu Ala Ser Arg Ala Ala Asn Pro
 35 40 45 50
 gtt tta cta gag cct atg atg aaa gtg gaa gtg gaa gtc cct gaa gaa 248
 Val Leu Leu Glu Pro Met Met Lys Val Glu Val Glu Val Pro Glu Glu
 55 60 65
 tac atg ggc gat gtg att ggc gat ttg aat aga aga aga ggg caa atc 296
 Tyr Met Gly Asp Val Ile Gly Asp Leu Asn Arg Arg Arg Gly Gln Ile
 70 75 80
 aat tct atg gac gat aga tta ggc ttg aaa atc gtg aac gct ttt gtg 344
 Asn Ser Met Asp Asp Arg Leu Gly Leu Lys Ile Val Asn Ala Phe Val
 85 90 95
 ccg ttg gtg gaa atg ttt ggc tat tct acg gat tta cga tca gcc acc 392
 Pro Leu Val Glu Met Phe Gly Tyr Ser Thr Asp Leu Arg Ser Ala Thr
 100 105 110
 caa ggg cgt ggg act tac tct atg gag ttt gat cat tat ggc gaa gtg 440
 Gln Gly Arg Gly Thr Tyr Ser Met Glu Phe Asp His Tyr Gly Glu Val
 115 120 125 130
 cct agc aat atc gct aag gaa att gta gaa aag cgc aaa ggc 482
 Pro Ser Asn Ile Ala Lys Glu Ile Val Glu Lys Arg Lys Gly
 135 140
 tgatttaatt ataacgctct cttattttta gggggtgtta taggtgctgt tta 535
 <210> 156
 <211> 144
 <212> PRT
 <213> *Helicobacter pylori*
 <400> 156
 Met Gln Asn Gly Val Leu Ala Gly Tyr Pro Val Val Asp Phe Lys Val
 1 5 10 15
 Thr Leu Tyr Asp Gly Ser Tyr His Asp Val Asp Ser Ser Glu Met Ala
 20 25 30
 Phe Lys Ile Ala Gly Ser Met Ala Phe Lys Glu Ala Ser Arg Ala Ala
 35 40 45
 Asn Pro Val Leu Leu Glu Pro Met Met Lys Val Glu Val Glu Val Pro
 50 55 60
 Glu Glu Tyr Met Gly Asp Val Ile Gly Asp Leu Asn Arg Arg Arg Gly
 65 70 75 80
 Gln Ile Asn Ser Met Asp Asp Arg Leu Gly Leu Lys Ile Val Asn Ala
 85 90 95
 Phe Val Pro Leu Val Glu Met Phe Gly Tyr Ser Thr Asp Leu Arg Ser
 100 105 110
 Ala Thr Gln Gly Arg Gly Thr Tyr Ser Met Glu Phe Asp His Tyr Gly
 115 120 125
 Glu Val Pro Ser Asn Ile Ala Lys Glu Ile Val Glu Lys Arg Lys Gly
 130 135 140

<210> 157
 <211> 740
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (51)...(671)

<400> 157
 ctctctcttc aagcttggat aacaaatgcg gtttgaagag ttctaacgcc atg ttt 56
 Met Phe
 1

tta ggc aac ccg cat tca tcc att ttg aga tta ggc cca acc aca atc 104
 Leu Gly Asn Pro His Ser Ser Ile Leu Arg Leu Gly Pro Thr Thr Ile
 5 10 15

acg ctt ctg cct gaa aaa tcc acg cgc tta cct aaa agg ttt tgc ctg 152
 Thr Leu Leu Pro Glu Lys Ser Thr Arg Leu Pro Lys Arg Phe Cys Leu
 20 25 30

aaa cgc ccc tgc ttg cct tta atg att tca ctg agc gat ttt aaa ggg 200
 Lys Arg Pro Cys Leu Pro Leu Met Ile Ser Leu Ser Asp Phe Lys Gly
 35 40 45 50

cgt ttg tta gcc cct tta acc gca tta gtg ctg cgg ccg tta tca aaa 248
 Arg Leu Leu Ala Pro Leu Thr Ala Leu Val Leu Arg Pro Leu Ser Lys
 55 60 65

agc aca tcc acg gct tct tgc aac atc ctt ttt tca ttg cgc aca atg 296
 Ser Thr Ser Thr Ala Ser Cys Asn Ile Leu Phe Ser Leu Arg Thr Met
 70 75 80

att tct ggc gct cca agc tcc att aag cgt ttc aag cgt tgg tta cga 344
 Ile Ser Gly Ala Pro Ser Ser Ile Lys Arg Phe Lys Arg Trp Leu Arg
 85 90 95

ttg atg aca cga cga tac aat tca ttc aca tcg ctg act gca aac ttc 392
 Leu Met Thr Arg Arg Tyr Asn Ser Phe Thr Ser Leu Thr Ala Asn Phe
 100 105 110

ccg cca tct agc gcg act aaa ggc ctt aaa tcc ggt ggc aat acc ggt 440
 Pro Pro Ser Ser Ala Thr Lys Gly Leu Lys Ser Gly Gly Asn Thr Gly
 115 120 125 130

aaa acc gtg agc atc atc cat tca ggc cta tta cca gaa ttt aaa aag 488
 Lys Thr Val Ser Ile Ile His Ser Gly Leu Leu Pro Glu Phe Lys Lys
 135 140 145

ctt tct acc act ttc aaa cgc tta atg agt ttt ttc ttt ttc gca tca 536
 Leu Ser Thr Thr Phe Lys Arg Leu Met Ser Phe Phe Phe Phe Ala Ser
 150 155 160

gaa ttg gtg tct ttc act tct tct ttc aaa ctc tgc aat aag gtg atc 584

Glu Leu Val Ser Phe Thr Ser Ser Phe Lys Leu Cys Asn Lys Val Ile
165 170 175

aaa tca att tct tct aac aaa tcc ttg atc gct tca ccg ccc att tgc 632
Lys Ser Ile Ser Ser Asn Lys Ser Leu Ile Ala Ser Pro Pro Ile Cys
180 185 190

gct aca aag ccc ctg tct tcg tat ctt cgt gag ata ttt tgatactgct 681
Ala Thr Lys Pro Leu Ser Ser Tyr Leu Arg Glu Ile Phe
195 200 205

cttcattcaa aatatcgtat ttcatcacaa gcttagtgcc ttcattgtca taagcggct 740

<210> 158
<211> 207
<212> PRT
<213> Helicobacter pylori

<400> 158
Met Phe Leu Gly Asn Pro His Ser Ser Ile Leu Arg Leu Gly Pro Thr
1 5 10 15
Thr Ile Thr Leu Leu Pro Glu Lys Ser Thr Arg Leu Pro Lys Arg Phe
20 25 30
Cys Leu Lys Arg Pro Cys Leu Pro Leu Met Ile Ser Leu Ser Asp Phe
35 40 45
Lys Gly Arg Leu Leu Ala Pro Leu Thr Ala Leu Val Leu Arg Pro Leu
50 55 60
Ser Lys Ser Thr Ser Thr Ala Ser Cys Asn Ile Leu Phe Ser Leu Arg
65 70 75 80
Thr Met Ile Ser Gly Ala Pro Ser Ser Ile Lys Arg Phe Lys Arg Trp
85 90 95
Leu Arg Leu Met Thr Arg Arg Tyr Asn Ser Phe Thr Ser Leu Thr Ala
100 105 110
Asn Phe Pro Pro Ser Ser Ala Thr Lys Gly Leu Lys Ser Gly Gly Asn
115 120 125
Thr Gly Lys Thr Val Ser Ile Ile His Ser Gly Leu Leu Pro Glu Phe
130 135 140
Lys Lys Leu Ser Thr Thr Phe Lys Arg Leu Met Ser Phe Phe Phe Phe
145 150 155 160
Ala Ser Glu Leu Val Ser Phe Thr Ser Ser Phe Lys Leu Cys Asn Lys
165 170 175
Val Ile Lys Ser Ile Ser Ser Asn Lys Ser Leu Ile Ala Ser Pro Pro
180 185 190
Ile Cys Ala Thr Lys Pro Leu Ser Ser Tyr Leu Arg Glu Ile Phe
195 200 205

<210> 159
<211> 505
<212> DNA
<213> Helicobacter pylori

<220>
<221> CDS
<222> (1)...(411)

<400> 159
 caa tgt ggt gag aga gat ttt aga ggg ctt ttc ttt caa gca ata cga 48
 Gln Cys Gly Glu Arg Asp Phe Arg Gly Leu Phe Phe Gln Ala Ile Arg
 1 5 10 15

gtg tct aat tac gct aga aat tat caa gtc aaa cac aac ttg gct tac 96
 Val Ser Asn Tyr Ala Arg Asn Tyr Gln Val Lys His Asn Leu Ala Tyr
 20 25 30

tgg ggg gct aaa gat tat tta ggg tgc ggg gct ggg gct gtg ggc tgc 144
 Trp Gly Ala Lys Asp Tyr Leu Gly Cys Gly Ala Gly Ala Val Gly Cys
 35 40 45

gtg gcg aat gag cgc ttt ttt gca aaa aaa ctc ata gaa aac tac atc 192
 Val Ala Asn Glu Arg Phe Phe Ala Lys Lys Leu Ile Glu Asn Tyr Ile
 50 55 60

aaa gac ccc cta caa cgc caa gtt gag acg ctt aat aaa caa gac aaa 240
 Lys Asp Pro Leu Gln Arg Gln Val Glu Thr Leu Asn Lys Gln Asp Lys
 65 70 75 80

cgc tta gaa aag ctg ttt tta ggc ttg agg tgc gtg ctt ggg gtt gag 288
 Arg Leu Glu Lys Leu Phe Leu Gly Leu Arg Cys Val Leu Gly Val Glu
 85 90 95

ctt agt ttc tta gat gaa aat aaa gta aag ttt ttg att gaa gag aac 336
 Leu Ser Phe Leu Asp Glu Asn Lys Val Lys Phe Leu Ile Glu Glu Asn
 100 105 110

aag gct ttc att aaa aat aac cgc ttg ata gcg agc gat ttt ttc atg 384
 Lys Ala Phe Ile Lys Asn Asn Arg Leu Ile Ala Ser Asp Phe Phe Met
 115 120 125

gcc gat gaa atg gct ttg tgg ctg tta tgattgtagg ctttgcttca 431
 Ala Asp Glu Met Ala Leu Trp Leu Leu
 130 135

atcaagcgtt aataaaacgc tagaaagcgt tttttaatga atgcctacaa aatttttagc 491
 caaaaaccaa ccaa 505

<210> 160

<211> 137

<212> PRT

<213> *Helicobacter pylori*

<400> 160

Gln Cys Gly Glu Arg Asp Phe Arg Gly Leu Phe Phe Gln Ala Ile Arg
 1 5 10 15
 Val Ser Asn Tyr Ala Arg Asn Tyr Gln Val Lys His Asn Leu Ala Tyr
 20 25 30
 Trp Gly Ala Lys Asp Tyr Leu Gly Cys Gly Ala Gly Ala Val Gly Cys
 35 40 45
 Val Ala Asn Glu Arg Phe Phe Ala Lys Lys Leu Ile Glu Asn Tyr Ile
 50 55 60
 Lys Asp Pro Leu Gln Arg Gln Val Glu Thr Leu Asn Lys Gln Asp Lys

65		70		75		80									
Arg	Leu	Glu	Lys	Leu	Phe	Leu	Gly	Leu	Arg	Cys	Val	Leu	Gly	Val	Glu
				85					90					95	
Leu	Ser	Phe	Leu	Asp	Glu	Asn	Lys	Val	Lys	Phe	Leu	Ile	Glu	Glu	Asn
			100					105					110		
Lys	Ala	Phe	Ile	Lys	Asn	Asn	Arg	Leu	Ile	Ala	Ser	Asp	Phe	Phe	Met
		115					120					125			
Ala	Asp	Glu	Met	Ala	Leu	Trp	Leu	Leu							
	130					135									

<210> 161
 <211> 1260
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (55)...(1179)

<400> 161
 gttggtgttt gaaaggctct atgaagaaga attaaggcgc aagggttttt tata atg 57
 Met
 1

gtc tct ctc tat tta gaa aac ggg ctt ttt ttg caa gcg caa agt ttt 105
 Val Ser Leu Tyr Leu Glu Asn Gly Leu Phe Leu Gln Ala Gln Ser Phe
 5 10 15

ggg gct agc ggc acg caa gcg ggc gag ctt gtt ttt aac act tct atg 153
 Gly Ala Ser Gly Thr Gln Ala Gly Glu Leu Val Phe Asn Thr Ser Met
 20 25 30

agc ggt tat caa gaa gtc att agc gac cct agc tat aag ggg caa ttt 201
 Ser Gly Tyr Gln Glu Val Ile Ser Asp Pro Ser Tyr Lys Gly Gln Phe
 35 40 45

gtg gtt ttt agc atg cct gag att ggg gtt gtg ggt gct aat tct aaa 249
 Val Val Phe Ser Met Pro Glu Ile Gly Val Val Gly Ala Asn Ser Lys
 50 55 60 65

gat gat gaa tcc ttt ttt tca tgc gca ggg gtt tta gcg cgc cat tac 297
 Asp Asp Glu Ser Phe Phe Ser Cys Ala Gly Val Leu Ala Arg His Tyr
 70 75 80

aac gaa ttt ttt tct aac tca agg gcg gat ttt agc ttg agc gct tat 345
 Asn Glu Phe Phe Ser Asn Ser Arg Ala Asp Phe Ser Leu Ser Ala Tyr
 85 90 95

ttg aaa gag cgt ggc gtt tta ggg gtt tgt ggc gtt gat act agg agt 393
 Leu Lys Glu Arg Gly Val Leu Gly Val Cys Gly Val Asp Thr Arg Ser
 100 105 110

ttg att aaa acc tta cgc cat cat ggg tgc tta atg atg gtc gct tcc 441
 Leu Ile Lys Thr Leu Arg His His Gly Cys Leu Met Met Val Ala Ser

115	120	125	
acg ata gag cat gac aaa aac aag ctt gaa gaa att tta aaa aac gct			489
Thr Ile Glu His Asp Lys Asn Lys Leu Glu Glu Ile Leu Lys Asn Ala			
130	135	140	145
cct aaa att tct cac tcc ccc cta gtg tct agc gtt tct acg cca aaa			537
Pro Lys Ile Ser His Ser Pro Leu Val Ser Ser Val Ser Thr Pro Lys			
	150	155	160
ata acc acg cac cag cgt gcg act ttt gat ttc aaa acc cta gat tac			585
Ile Thr Thr His Gln Arg Ala Thr Phe Asp Phe Lys Thr Leu Asp Tyr			
	165	170	175
aag cct ttt gat gaa aaa acc tct cat aaa att atc gcg gtg tta gac			633
Lys Pro Phe Asp Glu Lys Thr Ser His Lys Ile Ile Ala Val Leu Asp			
	180	185	190
ttt ggg gct aag ggc aat att tta aac gag ctt caa aat gtg ggg tta			681
Phe Gly Ala Lys Gly Asn Ile Leu Asn Glu Leu Gln Asn Val Gly Leu			
	195	200	205
aaa gcc ctt att tac ccg cac cac act aaa gct agc gag ctg att aaa			729
Lys Ala Leu Ile Tyr Pro His His Thr Lys Ala Ser Glu Leu Ile Lys			
	210	215	225
gcc tat gaa aaa aaa gaa att agc ggg att ttc ctc tct aac ggg ccg			777
Ala Tyr Glu Lys Lys Glu Ile Ser Gly Ile Phe Leu Ser Asn Gly Pro			
	230	235	240
ggc gat cct tta agc ttg cag caa gaa att ggc gaa atc aaa caa ctc			825
Gly Asp Pro Leu Ser Leu Gln Gln Glu Ile Gly Glu Ile Lys Gln Leu			
	245	250	255
att aac gct aaa atc ccc atg ctt ggc att tgc tta ggg cat caa ttg			873
Ile Asn Ala Lys Ile Pro Met Leu Gly Ile Cys Leu Gly His Gln Leu			
	260	265	270
ctc tct atc gct caa ggc tac cct act tac aag ctc aaa ttt ggt cat			921
Leu Ser Ile Ala Gln Gly Tyr Pro Thr Tyr Lys Leu Lys Phe Gly His			
	275	280	285
cat ggg agc aac cac ccc gtt aaa aac cta aaa aca aac gcc gta gaa			969
His Gly Ser Asn His Pro Val Lys Asn Leu Lys Thr Asn Ala Val Glu			
	290	295	300
atc acc gcg caa aac cac aac tat tgc gtc cct gaa gac att gaa gaa			1017
Ile Thr Ala Gln Asn His Asn Tyr Cys Val Pro Glu Asp Ile Glu Glu			
	310	315	320
atc gcc att atc acg cac cgc aat ctt ttt gac aac acc att gag ggc			1065
Ile Ala Ile Ile Thr His Arg Asn Leu Phe Asp Asn Thr Ile Glu Gly			
	325	330	335
gtg cgt tat aaa aac gct ccc att atc tct gtc cag cac cac cca gaa			1113

Val Arg Tyr Lys Asn Ala Pro Ile Ile Ser Val Gln His His Pro Glu
 340 345 350
 agt agc cca ggt cct aaa gag agc cac tat att ttt aaa gaa ttt gtg 1161
 Ser Ser Pro Gly Pro Lys Glu Ser His Tyr Ile Phe Lys Glu Phe Val
 355 360 365
 gaa ttg tta aag gat ttt taggggtttt taaaacagcg cttatagaga 1209
 Glu Leu Leu Lys Asp Phe
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 35 40 45
 Phe Val Val Phe Ser Met Pro Glu Ile Gly Val Val Gly Ala Asn Ser
 50 55 60
 Lys Asp Asp Glu Ser Phe Ser Cys Ala Gly Val Leu Ala Arg His
 65 70 75 80
 Tyr Asn Glu Phe Phe Ser Asn Ser Arg Ala Asp Phe Ser Leu Ser Ala
 85 90 95
 Tyr Leu Lys Glu Arg Gly Val Leu Gly Val Cys Gly Val Asp Thr Arg
 100 105 110
 Ser Leu Ile Lys Thr Leu Arg His His Gly Cys Leu Met Met Val Ala
 115 120 125
 Ser Thr Ile Glu His Asp Lys Asn Lys Leu Glu Glu Ile Leu Lys Asn
 130 135 140
 Ala Pro Lys Ile Ser His Ser Pro Leu Val Ser Ser Val Ser Thr Pro
 145 150 155 160
 Lys Ile Thr Thr His Gln Arg Ala Thr Phe Asp Phe Lys Thr Leu Asp
 165 170 175
 Tyr Lys Pro Phe Asp Glu Lys Thr Ser His Lys Ile Ile Ala Val Leu
 180 185 190
 Asp Phe Gly Ala Lys Gly Asn Ile Leu Asn Glu Leu Gln Asn Val Gly
 195 200 205
 Leu Lys Ala Leu Ile Tyr Pro His His Thr Lys Ala Ser Glu Leu Ile
 210 215 220
 Lys Ala Tyr Glu Lys Lys Glu Ile Ser Gly Ile Phe Leu Ser Asn Gly
 225 230 235 240
 Pro Gly Asp Pro Leu Ser Leu Gln Gln Glu Ile Gly Glu Ile Lys Gln
 245 250 255
 Leu Ile Asn Ala Lys Ile Pro Met Leu Gly Ile Cys Leu Gly His Gln
 260 265 270
 Leu Leu Ser Ile Ala Gln Gly Tyr Pro Thr Tyr Lys Leu Lys Phe Gly
 275 280 285

His	His	Gly	Ser	Asn	His	Pro	Val	Lys	Asn	Leu	Lys	Thr	Asn	Ala	Val
290						295					300				
Glu	Ile	Thr	Ala	Gln	Asn	His	Asn	Tyr	Cys	Val	Pro	Glu	Asp	Ile	Glu
305					310					315					320
Glu	Ile	Ala	Ile	Ile	Thr	His	Arg	Asn	Leu	Phe	Asp	Asn	Thr	Ile	Glu
				325					330					335	
Gly	Val	Arg	Tyr	Lys	Asn	Ala	Pro	Ile	Ile	Ser	Val	Gln	His	His	Pro
			340					345				350			
Glu	Ser	Ser	Pro	Gly	Pro	Lys	Glu	Ser	His	Tyr	Ile	Phe	Lys	Glu	Phe
	355						360					365			
Val	Glu	Leu	Leu	Lys	Asp	Phe									
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 Met
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gat att cgc aac gaa ttt tta caa ttt ttt caa aat aaa ggg cat gcc 166
 Asp Ile Arg Asn Glu Phe Leu Gln Phe Phe Gln Asn Lys Gly His Ala
 5 10 15

gtt tat cct agc atg cct tta gtg cct aat gac gct acc ttg ctt ttt 214
 Val Tyr Pro Ser Met Pro Leu Val Pro Asn Asp Ala Thr Leu Leu Phe
 20 25 30

acc aat gcc ggc atg gtg caa ttt aaa gat att ttt acc ggg att gtg 262
 Thr Asn Ala Gly Met Val Gln Phe Lys Asp Ile Phe Thr Gly Ile Val
 35 40 45

cca cgc cct agc att cct aga gcg gca agc tcg caa ttg tgc atg cgc 310
 Pro Arg Pro Ser Ile Pro Arg Ala Ala Ser Ser Gln Leu Cys Met Arg
 50 55 60 65

gca ggc ggc aag cat aac gat ttg gaa aat gtc ggt tat acc gca agg 358
 Ala Gly Gly Lys His Asn Asp Leu Glu Asn Val Gly Tyr Thr Ala Arg
 70 75 80

cac cac acg ctt ttt gaa atg cta ggg aat ttc tct ttt ggg gat tat 406
 His His Thr Leu Phe Glu Met Leu Gly Asn Phe Ser Phe Gly Asp Tyr
 85 90 95

ttc aaa gaa gaa gcg atc ttg ttt gcg tgg gaa ttt gta acc aag aat 454
 Phe Lys Glu Glu Ala Ile Leu Phe Ala Trp Glu Phe Val Thr Lys Asn

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gat gaa gcc gtt aaa tta tgg gaa aag ttt gtg cct gtt gat agg att Asp Glu Ala Val Lys Leu Trp Glu Lys Phe Val Pro Val Asp Arg Ile 130 135 140 145			550
aaa aaa atg ggc gat aaa gat aat ttt tgg caa atg ggc gat agc ggg Lys Lys Met Gly Asp Lys Asp Asn Phe Trp Gln Met Gly Asp Ser Gly 150 155 160			598
cct tgc ggg cct tgc agt gaa att tac att gat cag ggc gaa aaa cac Pro Cys Gly Pro Cys Ser Glu Ile Tyr Ile Asp Gln Gly Glu Lys His 165 170 175			646
ttt aag ggg agc gag gat tat ttt ggg ggc gag ggc gat agg ttt tta Phe Lys Gly Ser Glu Asp Tyr Phe Gly Gly Glu Gly Asp Arg Phe Leu 180 185 190			694
gaa att tgg aat ctg gtg ttc atg caa tac gaa cgc tct aat gat ggc Glu Ile Trp Asn Leu Val Phe Met Gln Tyr Glu Arg Ser Asn Asp Gly 195 200 205			742
gtt tta tcc ccc ttg cca aag cct agc att gat aca ggc atg gga tta Val Leu Ser Pro Leu Pro Lys Pro Ser Ile Asp Thr Gly Met Gly Leu 210 215 220 225			790
gaa agg gtg caa gcg cta tta gaa cat aag ctc aat aat ttt gat tct Glu Arg Val Gln Ala Leu Leu Glu His Lys Leu Asn Asn Phe Asp Ser 230 235 240			838
tca tta ttt gcg ccc cta atg gaa gaa atc agc gag ctt aca agc cta Ser Leu Phe Ala Pro Leu Met Glu Glu Ile Ser Glu Leu Thr Ser Leu 245 250 255			886
gat tat gcg agc gag ttc cag cca agc ttt agg gta gtg gcc gat cac Asp Tyr Ala Ser Glu Phe Gln Pro Ser Phe Arg Val Val Ala Asp His 260 265 270			934
gca aga gcg gta gca ttc ttg ctc gct caa ggg gtg cat ttc aat aag Ala Arg Ala Val Ala Phe Leu Leu Ala Gln Gly Val His Phe Asn Lys 275 280 285			982
gaa ggc cgt ggc tat gtt tta agg cgc att tta agg cga gcc tta agg Glu Gly Arg Gly Tyr Val Leu Arg Arg Ile Leu Arg Arg Ala Leu Arg 290 295 300 305			1030
cat ggg tat tta atg ggc ttg aaa gaa gcg ttt tta tac aaa gtc gtg His Gly Tyr Leu Met Gly Leu Lys Glu Ala Phe Leu Tyr Lys Val Val 310 315 320			1078
ggc gtg gtg tgc gag caa ttt gct aac acg cat gcg tat ttg aaa gag			1126

Gly	Val	Val	Cys	Glu	Gln	Phe	Ala	Asn	Thr	His	Ala	Tyr	Leu	Lys	Glu		
			325					330					335				
tct	aaa	gaa	atg	gtg	gta	aaa	gaa	tgt	ttt	gaa	gaa	gaa	gag	cac	ttt	1174	
Ser	Lys	Glu	Met	Val	Val	Lys	Glu	Cys	Phe	Glu	Glu	Glu	Glu	His	Phe		
		340					345					350					
tta	gag	act	ttg	gaa	tcg	ggc	atg	gaa	ttg	ttt	aac	ttg	tct	tta	aag	1222	
Leu	Glu	Thr	Leu	Glu	Ser	Gly	Met	Glu	Leu	Phe	Asn	Leu	Ser	Leu	Lys		
		355				360					365						
cat	ttg	aat	gaa	aat	aaa	atc	ttt	gat	ggc	aag	atc	gct	ttc	aag	ctt	1270	
His	Leu	Asn	Glu	Asn	Lys	Ile	Phe	Asp	Gly	Lys	Ile	Ala	Phe	Lys	Leu		
370					375					380					385		
tat	gac	act	ttt	ggg	ttc	cct	ttg	gat	tta	aca	aac	gac	atg	tta	aga	1318	
Tyr	Asp	Thr	Phe	Gly	Phe	Pro	Leu	Asp	Leu	Thr	Asn	Asp	Met	Leu	Arg		
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agt	cat	ggg	gag	tgt	gag	gat	atg	caa	ggc	ttt	gaa	ttg	tgc	atg	caa	1366	
Ser	His	Gly	Ala	Cys	Ala	Asp	Met	Gln	Gly	Phe	Glu	Leu	Cys	Met	Gln		
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gag	caa	gtg	aaa	cgc	tct	aaa	gct	tca	tgg	aaa	ggc	aaa	caa	aac	aac	1414	
Glu	Gln	Val	Lys	Arg	Ser	Lys	Ala	Ser	Trp	Lys	Gly	Lys	Gln	Asn	Asn		
		420					425					430					
gcc	gat	ttt	agc	gct	att	tta	aac	gct	tat	gca	cct	aat	gtt	ttt	gtg	1462	
Ala	Asp	Phe	Ser	Ala	Ile	Leu	Asn	Ala	Tyr	Ala	Pro	Asn	Val	Phe	Val		
	435				440						445						
ggg	tat	gaa	acg	aca	gaa	tgt	tct	gct	aaa	gtt	tta	ggg	ttt	ttt	gat	1510	
Gly	Tyr	Glu	Thr	Thr	Glu	Cys	Ser	Ala	Lys	Val	Leu	Gly	Phe	Phe	Asp		
450					455				460						465		
agc	gat	ttt	aaa	gaa	ata	acc	gat	gca	aat	cct	aac	caa	gaa	gtc	tgg	1558	
Ser	Asp	Phe	Lys	Glu	Ile	Thr	Asp	Ala	Asn	Pro	Asn	Gln	Glu	Val	Trp		
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gtg	ttg	tta	gaa	aaa	acc	cct	ttt	tat	gca	gaa	ggg	gga	ggg	gct	ata	1606	
Val	Leu	Leu	Glu	Lys	Thr	Pro	Phe	Tyr	Ala	Glu	Gly	Gly	Gly	Ala	Ile		
			485				490						495				
ggc	gat	agg	ggc	gag	ctt	ttt	aaa	gac	aat	gga	gaa	gtg	gct	atc	gtg	1654	
Gly	Asp	Arg	Gly	Ala	Leu	Phe	Lys	Asp	Asn	Gly	Glu	Val	Ala	Ile	Val		
		500					505					510					
tta	gat	aca	aaa	aac	ttt	ttt	ggg	ctt	aat	ttt	tca	ctc	ctt	gaa	atc	1702	
Leu	Asp	Thr	Lys	Asn	Phe	Phe	Gly	Leu	Asn	Phe	Ser	Leu	Leu	Glu	Ile		
		515				520					525						
aaa	aaa	gag	cta	aaa	aaa	ggc	gat	caa	gtg	atc	gag	caa	gtg	agc	gat	1750	
Lys	Lys	Ala	Leu	Lys	Lys	Gly	Asp	Gln	Val	Ile	Ala	Gln	Val	Ser	Asp		
530					535					540					545		

gag cgc ttt gaa atc gcc aaa cac cat agt gcg act cat tta ttg cag	1798
Glu Arg Phe Glu Ile Ala Lys His His Ser Ala Thr His Leu Leu Gln	
550 555 560	
agc gct tta aga gaa gtt tta ggc tcg cat gtg agt caa gcg ggg agt	1846
Ser Ala Leu Arg Glu Val Leu Gly Ser His Val Ser Gln Ala Gly Ser	
565 570 575	
tta gtg gaa tcc aag cga ttg cgc ttt gat ttc tcg cat gct aaa gcg	1894
Leu Val Glu Ser Lys Arg Leu Arg Phe Asp Phe Ser His Ala Lys Ala	
580 585 590	
ctc aat gat gaa gag cta gaa aaa gta gaa gat tta gtc aac gct caa	1942
Leu Asn Asp Glu Glu Leu Glu Lys Val Glu Asp Leu Val Asn Ala Gln	
595 600 605	
att ttc aag cac cta aat agc cag gtg gag cat atg cct tta aac caa	1990
Ile Phe Lys His Leu Asn Ser Gln Val Glu His Met Pro Leu Asn Gln	
610 615 620 625	
gcc aaa gat aag gga gcg tta gcg tta ttc agt gaa aaa tac gct gaa	2038
Ala Lys Asp Lys Gly Ala Leu Ala Leu Phe Ser Glu Lys Tyr Ala Glu	
630 635 640	
aat gtg cgg gtg gtg agc ttt aaa gaa gcg tcc att gaa ttg tgt ggg	2086
Asn Val Arg Val Val Ser Phe Lys Glu Ala Ser Ile Glu Leu Cys Gly	
645 650 655	
ggc att cat gtg gaa aat act ggg ctt att ggg ggg ttt agg att gta	2134
Gly Ile His Val Glu Asn Thr Gly Leu Ile Gly Gly Phe Arg Ile Val	
660 665 670	
aaa gaa agc ggg gtg agt agt ggg gtc aga cgc att gaa gcg gtg tgc	2182
Lys Glu Ser Gly Val Ser Ser Gly Val Arg Arg Ile Glu Ala Val Cys	
675 680 685	
ggg aaa gcc ttt tac caa ctg gct aaa gaa gaa aat aaa gag ctt aaa	2230
Gly Lys Ala Phe Tyr Gln Leu Ala Lys Glu Glu Asn Lys Glu Leu Lys	
690 695 700 705	
aac gct aag act tta ttg aaa aat aac gat gtg atc gcc ggt atc aat	2278
Asn Ala Lys Thr Leu Leu Lys Asn Asn Asp Val Ile Ala Gly Ile Asn	
710 715 720	
aag ctt aaa gag agc gtg aaa aac agc caa aaa gcc ccc gtt tct atg	2326
Lys Leu Lys Glu Ser Val Lys Asn Ser Gln Lys Ala Pro Val Ser Met	
725 730 735	
gat tta ccg gtt gaa aaa atc cat ggc gtg aat ttg gtg gtg ggc gta	2374
Asp Leu Pro Val Glu Lys Ile His Gly Val Asn Leu Val Val Gly Val	
740 745 750	
gtg gaa caa ggc gac att aaa gaa atg att gac cga ttg aaa agt aag	2422
Val Glu Gln Gly Asp Ile Lys Glu Met Ile Asp Arg Leu Lys Ser Lys	
755 760 765	

cat gaa aga ttg ctc gct atg gtg ttt aaa aaa gaa aat gag cga atc 2470
 His Glu Arg Leu Leu Ala Met Val Phe Lys Lys Glu Asn Glu Arg Ile
 770 775 780 785

act ctc gca tgc ggg gtg aaa aac gcg ccc ata aaa gcg aat gtg tgg 2518
 Thr Leu Ala Cys Gly Val Lys Asn Ala Pro Ile Lys Ala Asn Val Trp
 790 795 800

gct aat gaa gtg gcg caa att tta ggg ggc aaa ggg ggc ggg aga ggt 2566
 Ala Asn Glu Val Ala Gln Ile Leu Gly Gly Lys Gly Gly Gly Arg Gly
 805 810 815

gat ttt gcg agc gct gga ggc aag gat att gaa aat ttg caa gcc gca 2614
 Asp Phe Ala Ser Ala Gly Gly Lys Asp Ile Glu Asn Leu Gln Ala Ala
 820 825 830

ctc aat tta gcg aaa aat acc gct ctt aaa gct tta gag gga 2656
 Leu Asn Leu Ala Lys Asn Thr Ala Leu Lys Ala Leu Glu Gly
 835 840 845

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 Val Pro Arg Pro Ser Ile Pro Arg Ala Ala Ser Ser Gln Leu Cys Met
 50 55 60
 Arg Ala Gly Gly Lys His Asn Asp Leu Glu Asn Val Gly Tyr Thr Ala
 65 70 75 80
 Arg His His Thr Leu Phe Glu Met Leu Gly Asn Phe Ser Phe Gly Asp
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 Tyr Phe Lys Glu Glu Ala Ile Leu Phe Ala Trp Glu Phe Val Thr Lys
 100 105 110
 Asn Leu Gly Phe Lys Pro Lys Asp Leu Tyr Ile Ser Val His Glu Lys
 115 120 125
 Asp Asp Glu Ala Val Lys Leu Trp Glu Lys Phe Val Pro Val Asp Arg
 130 135 140
 Ile Lys Lys Met Gly Asp Lys Asp Asn Phe Trp Gln Met Gly Asp Ser
 145 150 155 160
 Gly Pro Cys Gly Pro Cys Ser Glu Ile Tyr Ile Asp Gln Gly Glu Lys
 165 170 175
 His Phe Lys Gly Ser Glu Asp Tyr Phe Gly Gly Glu Gly Asp Arg Phe
 180 185 190

Leu	Glu	Ile	Trp	Asn	Leu	Val	Phe	Met	Gln	Tyr	Glu	Arg	Ser	Asn	Asp		
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Gly	Val	Leu	Ser	Pro	Leu	Pro	Lys	Pro	Ser	Ile	Asp	Thr	Gly	Met	Gly		
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Ser	Ser	Leu	Phe	Ala	Pro	Leu	Met	Glu	Glu	Ile	Ser	Glu	Leu	Thr	Ser		
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Leu	Asp	Tyr	Ala	Ser	Glu	Phe	Gln	Pro	Ser	Phe	Arg	Val	Val	Ala	Asp		
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His	Ala	Arg	Ala	Val	Ala	Phe	Leu	Leu	Ala	Gln	Gly	Val	His	Phe	Asn		
		275					280					285					
Lys	Glu	Gly	Arg	Gly	Tyr	Val	Leu	Arg	Arg	Ile	Leu	Arg	Arg	Ala	Leu		
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Arg	His	Gly	Tyr	Leu	Met	Gly	Leu	Lys	Glu	Ala	Phe	Leu	Tyr	Lys	Val		
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Val	Gly	Val	Val	Cys	Glu	Gln	Phe	Ala	Asn	Thr	His	Ala	Tyr	Leu	Lys		
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Glu	Ser	Lys	Glu	Met	Val	Val	Lys	Glu	Cys	Phe	Glu	Glu	Glu	Glu	His		
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Phe	Leu	Glu	Thr	Leu	Glu	Ser	Gly	Met	Glu	Leu	Phe	Asn	Leu	Ser	Leu		
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Lys	His	Leu	Asn	Glu	Asn	Lys	Ile	Phe	Asp	Gly	Lys	Ile	Ala	Phe	Lys		
		370				375						380					
Leu	Tyr	Asp	Thr	Phe	Gly	Phe	Pro	Leu	Asp	Leu	Thr	Asn	Asp	Met	Leu		
385					390					395					400		
Arg	Ser	His	Gly	Ala	Cys	Ala	Asp	Met	Gln	Gly	Phe	Glu	Leu	Cys	Met		
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Gln	Glu	Gln	Val	Lys	Arg	Ser	Lys	Ala	Ser	Trp	Lys	Gly	Lys	Gln	Asn		
			420					425						430			
Asn	Ala	Asp	Phe	Ser	Ala	Ile	Leu	Asn	Ala	Tyr	Ala	Pro	Asn	Val	Phe		
		435					440					445					
Val	Gly	Tyr	Glu	Thr	Thr	Glu	Cys	Ser	Ala	Lys	Val	Leu	Gly	Phe	Phe		
		450				455						460					
Asp	Ser	Asp	Phe	Lys	Glu	Ile	Thr	Asp	Ala	Asn	Pro	Asn	Gln	Glu	Val		
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Trp	Val	Leu	Leu	Glu	Lys	Thr	Pro	Phe	Tyr	Ala	Glu	Gly	Gly	Gly	Ala		
				485					490						495		
Ile	Gly	Asp	Arg	Gly	Ala	Leu	Phe	Lys	Asp	Asn	Gly	Glu	Val	Ala	Ile		
			500					505						510			
Val	Leu	Asp	Thr	Lys	Asn	Phe	Phe	Gly	Leu	Asn	Phe	Ser	Leu	Leu	Glu		
		515					520					525					
Ile	Lys	Lys	Ala	Leu	Lys	Lys	Gly	Asp	Gln	Val	Ile	Ala	Gln	Val	Ser		
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Asp	Glu	Arg	Phe	Glu	Ile	Ala	Lys	His	His	Ser	Ala	Thr	His	Leu	Leu		
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Gln	Ser	Ala	Leu	Arg	Glu	Val	Leu	Gly	Ser	His	Val	Ser	Gln	Ala	Gly		
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Ser	Leu	Val	Glu	Ser	Lys	Arg	Leu	Arg	Phe	Asp	Phe	Ser	His	Ala	Lys		
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Gln	Ile	Phe	Lys	His	Leu	Asn	Ser	Gln	Val	Glu	His	Met	Pro	Leu	Asn		
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Gln	Ala	Lys	Asp	Lys	Gly	Ala	Leu	Ala	Leu	Phe	Ser	Glu	Lys	Tyr	Ala		

625		630		635		640
Glu Asn Val Arg Val Val Ser Phe Lys Glu Ala Ser Ile Glu Leu Cys						
		645		650		655
Gly Gly Ile His Val Glu Asn Thr Gly Leu Ile Gly Gly Phe Arg Ile						
		660		665		670
Val Lys Glu Ser Gly Val Ser Ser Gly Val Arg Arg Ile Glu Ala Val						
		675		680		685
Cys Gly Lys Ala Phe Tyr Gln Leu Ala Lys Glu Glu Asn Lys Glu Leu						
		690		695		700
Lys Asn Ala Lys Thr Leu Lys Asn Asn Asp Val Ile Ala Gly Ile						
705		710		715		720
Asn Lys Leu Lys Glu Ser Val Lys Asn Ser Gln Lys Ala Pro Val Ser						
		725		730		735
Met Asp Leu Pro Val Glu Lys Ile His Gly Val Asn Leu Val Val Gly						
		740		745		750
Val Val Glu Gln Gly Asp Ile Lys Glu Met Ile Asp Arg Leu Lys Ser						
		755		760		765
Lys His Glu Arg Leu Leu Ala Met Val Phe Lys Lys Glu Asn Glu Arg						
		770		775		780
Ile Thr Leu Ala Cys Gly Val Lys Asn Ala Pro Ile Lys Ala Asn Val						
785		790		795		800
Trp Ala Asn Glu Val Ala Gln Ile Leu Gly Gly Lys Gly Gly Gly Arg						
		805		810		815
Gly Asp Phe Ala Ser Ala Gly Gly Lys Asp Ile Glu Asn Leu Gln Ala						
		820		825		830
Ala Leu Asn Leu Ala Lys Asn Thr Ala Leu Lys Ala Leu Glu Gly						
		835		840		845

<210> 165
 <211> 720
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (100)...(636)

<400> 165
 tcgcacgcc aagaaaaaca cgaaaaaacc gaacacacgc attctcacca cacagaggaa 60
 gcagaaagcg taggatctca tagcgaataa gggcttatc atg ttt aat aaa gtg 114
 Met Phe Asn Lys Val
 1 5

 att atg gta ggg cgt ttg acc agg aat gtg gag ttg aaa tat ttg cct 162
 Ile Met Val Gly Arg Leu Thr Arg Asn Val Glu Leu Lys Tyr Leu Pro
 10 15 20

 agc ggt tcg gct gcg gct aca ata ggt tta gcc aca agc agg cgt ttt 210
 Ser Gly Ser Ala Ala Ala Thr Ile Gly Leu Ala Thr Ser Arg Arg Phe
 25 30 35

 aaa aaa caa gac ggc acg cta ggc gaa gag gtg tgc ttt ata gat gcg 258
 Lys Lys Gln Asp Gly Thr Leu Gly Glu Glu Val Cys Phe Ile Asp Ala
 40 45 50

cgt ttg ttt ggg cga acg gct gaa atc gct aac cag tat ttg agc aag 306
 Arg Leu Phe Gly Arg Thr Ala Glu Ile Ala Asn Gln Tyr Leu Ser Lys
 55 60 65
 ggt tca agc gtt ttg ata gaa ggg cgt ttg act tat gag agt tgg atg 354
 Gly Ser Ser Val Leu Ile Glu Gly Arg Leu Thr Tyr Glu Ser Trp Met
 70 75 80 85
 gat caa acg ggc aaa aaa aat tcc cgc cac act atc aca gcg gac tcg 402
 Asp Gln Thr Gly Lys Lys Asn Ser Arg His Thr Ile Thr Ala Asp Ser
 90 95 100
 ttg caa ttt atg gat aaa aag tca gac aat ccc caa gca aac gct atg 450
 Leu Gln Phe Met Asp Lys Lys Ser Asp Asn Pro Gln Ala Asn Ala Met
 105 110 115
 caa gat agt ata atg cat gag aat tcc aac aac gct tat ccc gct aat 498
 Gln Asp Ser Ile Met His Glu Asn Ser Asn Asn Ala Tyr Pro Ala Asn
 120 125 130
 cat aac gct ccc agc caa gat cct ttt aac caa gct tat gcg caa aac 546
 His Asn Ala Pro Ser Gln Asp Pro Phe Asn Gln Ala Tyr Ala Gln Asn
 135 140 145
 gct tac gct aaa gag aat tta caa gca cag ccg tcc aag tat caa aac 594
 Ala Tyr Ala Lys Glu Asn Leu Gln Ala Gln Pro Ser Lys Tyr Gln Asn
 150 155 160 165
 agc gtg cct gaa atc aat att gat gaa gaa gaa atc ccc ttt 636
 Ser Val Pro Glu Ile Asn Ile Asp Glu Glu Glu Ile Pro Phe
 170 175
 taagggttaa aattaaggag acattatgga aagaaaacgc tattcaaaac gctattgcaa 696
 atacactgaa gctaaaatca gctt 720

<210> 166

<211> 179

<212> PRT

<213> *Helicobacter pylori*

<400> 166

Met Phe Asn Lys Val Ile Met Val Gly Arg Leu Thr Arg Asn Val Glu
 1 5 10 15
 Leu Lys Tyr Leu Pro Ser Gly Ser Ala Ala Thr Ile Gly Leu Ala
 20 25 30
 Thr Ser Arg Arg Phe Lys Lys Gln Asp Gly Thr Leu Gly Glu Val
 35 40 45
 Cys Phe Ile Asp Ala Arg Leu Phe Gly Arg Thr Ala Glu Ile Ala Asn
 50 55 60
 Gln Tyr Leu Ser Lys Gly Ser Ser Val Leu Ile Glu Gly Arg Leu Thr
 65 70 75 80
 Tyr Glu Ser Trp Met Asp Gln Thr Gly Lys Lys Asn Ser Arg His Thr
 85 90 95
 Ile Thr Ala Asp Ser Leu Gln Phe Met Asp Lys Lys Ser Asp Asn Pro

gct ttg att tta gga gct ggg ggg agc gct aaa gcc cta gcg tgt gaa 498
 Ala Leu Ile Leu Gly Ala Gly Gly Ser Ala Lys Ala Leu Ala Cys Glu
 125 130 135
 ttg aaa aaa caa ggc tta caa gtg agc gtg ttg aac cgc tct tct agg 546
 Leu Lys Lys Gln Gly Leu Gln Val Ser Val Leu Asn Arg Ser Ser Arg
 140 145 150
 gga ttg gat ttt ttc caa cgc ctg ggc tgt gat tgt ttt atg gag cct 594
 Gly Leu Asp Phe Phe Gln Arg Leu Gly Cys Asp Cys Phe Met Glu Pro
 155 160 165
 cct aaa agc gct ttt gat ttg att att aac gcc act tca gcg agt ttg 642
 Pro Lys Ser Ala Phe Asp Leu Ile Ile Asn Ala Thr Ser Ala Ser Leu
 170 175 180
 cat aac gaa ttg cct ttg aat aaa gag gtt ttg aaa ggg tat ttt aaa 690
 His Asn Glu Leu Pro Leu Asn Lys Glu Val Leu Lys Gly Tyr Phe Lys
 185 190 195 200
 gag ggc aag ctc gct tat gat ttg gcg tat ggg ttt tta acg ccc ttt 738
 Glu Gly Lys Leu Ala Tyr Asp Leu Ala Tyr Gly Phe Leu Thr Pro Phe
 205 210 215
 ttg tct tta gcc aaa gag tta aaa acc cct ttt caa gac gga aaa gac 786
 Leu Ser Leu Ala Lys Glu Leu Lys Thr Pro Phe Gln Asp Gly Lys Asp
 220 225 230
 atg ctc atc tat caa gct gct tta agt ttt gaa aaa ttc agc gct tct 834
 Met Leu Ile Tyr Gln Ala Ala Leu Ser Phe Glu Lys Phe Ser Ala Ser
 235 240 245
 caa atc cct tat tca aaa gcg ttt gaa gtc atg cga agt gtt ttt 879
 Gln Ile Pro Tyr Ser Lys Ala Phe Glu Val Met Arg Ser Val Phe
 250 255 260
 tgatgcaagg gtttttaaga agcctgtttt ttgggggttaa aaagatccct aaaccattcg 939
 ctcctctagt agaaaagggc gttttaaaag aagcgcttga attgaaaaag g 990

<210> 168

<211> 263

<212> PRT

<213> *Helicobacter pylori*

<400> 168

Met Lys Leu Lys Ser Phe Gly Val Phe Gly Asn Pro Ile Lys His Ser
 1 5 10 15
 Lys Ser Pro Leu Ile His Asn Ala Cys Phe Leu Thr Phe Gln Lys Glu
 20 25 30
 Leu Arg Phe Leu Gly His Tyr His Pro Ile Leu Leu Pro Leu Glu Ser
 35 40 45
 His Ile Lys Ser Glu Phe Leu His Leu Gly Leu Ser Gly Ala Asn Val
 50 55 60
 Thr Leu Pro Phe Lys Glu Arg Ala Phe Gln Val Cys Asp Lys Ile Lys

65		70		75		80									
Gly	Ile	Ala	Leu	Glu	Cys	Gly	Ala	Val	Asn	Thr	Leu	Val	Leu	Glu	Asn
			85						90					95	
Asp	Glu	Leu	Val	Gly	Tyr	Asn	Thr	Asp	Ala	Leu	Gly	Phe	Tyr	Leu	Ser
		100						105					110		
Leu	Lys	Gln	Lys	Asn	Tyr	Gln	Asn	Ala	Leu	Ile	Leu	Gly	Ala	Gly	Gly
		115					120						125		
Ser	Ala	Lys	Ala	Leu	Ala	Cys	Glu	Leu	Lys	Lys	Gln	Gly	Leu	Gln	Val
	130					135					140				
Ser	Val	Leu	Asn	Arg	Ser	Ser	Arg	Gly	Leu	Asp	Phe	Phe	Gln	Arg	Leu
145				150						155					160
Gly	Cys	Asp	Cys	Phe	Met	Glu	Pro	Pro	Lys	Ser	Ala	Phe	Asp	Leu	Ile
			165						170					175	
Ile	Asn	Ala	Thr	Ser	Ala	Ser	Leu	His	Asn	Glu	Leu	Pro	Leu	Asn	Lys
		180						185						190	
Glu	Val	Leu	Lys	Gly	Tyr	Phe	Lys	Glu	Gly	Lys	Leu	Ala	Tyr	Asp	Leu
	195						200					205			
Ala	Tyr	Gly	Phe	Leu	Thr	Pro	Phe	Leu	Ser	Leu	Ala	Lys	Glu	Leu	Lys
	210					215					220				
Thr	Pro	Phe	Gln	Asp	Gly	Lys	Asp	Met	Leu	Ile	Tyr	Gln	Ala	Ala	Leu
225				230						235					240
Ser	Phe	Glu	Lys	Phe	Ser	Ala	Ser	Gln	Ile	Pro	Tyr	Ser	Lys	Ala	Phe
			245						250					255	
Glu	Val	Met	Arg	Ser	Val	Phe									
		260													

<210> 169
 <211> 1080
 <212> DNA
 <213> *Helicobacter pylori*

<220>
 <221> CDS
 <222> (47)...(1033)

<400> 169	
tttttagaga gggcgtgttt gatagcgtgg atttaaagga gcaagc atg agc gct	55
	Met Ser Ala
	1
tat atc att gaa acc ctg att aaa att ttg att tta gtc gct gtt ttt	103
Tyr Ile Ile Glu Thr Leu Ile Lys Ile Leu Ile Leu Val Ala Val Phe	
5 10 15	
tcg gct tta gga ggc ttt gcc act tat att gaa agg aaa gtg tta gcc	151
Ser Ala Leu Gly Gly Phe Ala Thr Tyr Ile Glu Arg Lys Val Leu Ala	
20 25 30 35	
tat ttc caa cgc cgt tta ggg cct tgt tat gtg ggg cct ttt ggg ctt	199
Tyr Phe Gln Arg Arg Leu Gly Pro Cys Tyr Val Gly Pro Phe Gly Leu	
40 45 50	
ttg caa gtc gca gca gac ggc att aag ctt ttc act aaa gaa gac att	247
Leu Gln Val Ala Ala Asp Gly Ile Lys Leu Phe Thr Lys Glu Asp Ile	

55										60										65										
atc	cct	caa	ggc	gcg	aac	aaa	ttc	att	ttc	acg	cta	gcg	ccc	att	att	295														
Ile	Pro	Gln	Gly	Ala	Asn	Lys	Phe	Ile	Phe	Thr	Leu	Ala	Pro	Ile	Ile															
70						75						80																		
gcg	atg	gtg	agt	gcg	ttt	gtg	tcc	atg	gcg	cct	atc	ccc	ttt	ttc	cct	343														
Ala	Met	Val	Ser	Ala	Phe	Val	Ser	Met	Ala	Pro	Ile	Pro	Phe	Phe	Pro															
85						90						95																		
aat	ttc	act	ctg	ttt	ggc	tat	gag	atc	aag	ccc	ctt	att	tct	gac	atc	391														
Asn	Phe	Thr	Leu	Phe	Gly	Tyr	Glu	Ile	Lys	Pro	Leu	Ile	Ser	Asp	Ile															
100				105						110			115																	
aac	att	ggc	ttt	ttg	ttt	ttc	tta	gcc	gtg	ggt	tcg	gca	ggg	att	tat	439														
Asn	Ile	Gly	Phe	Leu	Phe	Phe	Leu	Ala	Val	Gly	Ser	Ala	Gly	Ile	Tyr															
			120						125			130																		
gcg	cct	att	tta	ggc	ggg	ctt	gac	tct	aat	aac	aaa	tac	tct	tta	att	487														
Ala	Pro	Ile	Leu	Ala	Gly	Leu	Ala	Ser	Asn	Asn	Lys	Tyr	Ser	Leu	Ile															
135						140						145																		
ggc	tcc	gca	aga	gcg	acg	atc	caa	ctg	ctc	agc	ttt	gaa	gtg	gtc	agc	535														
Gly	Ser	Ala	Arg	Ala	Thr	Ile	Gln	Leu	Leu	Ser	Phe	Glu	Val	Val	Ser															
150						155						160																		
act	tta	acc	att	cta	gcc	ccc	tta	atg	gtg	gta	gga	tcg	ctc	tct	tta	583														
Thr	Leu	Thr	Ile	Leu	Ala	Pro	Leu	Met	Val	Val	Gly	Ser	Leu	Ser	Leu															
165						170						175																		
gtg	gaa	atc	aat	cat	tac	caa	agc	ggt	ggg	ttt	tta	gac	tgg	ctt	gtg	631														
Val	Glu	Ile	Asn	His	Tyr	Gln	Ser	Gly	Gly	Phe	Leu	Asp	Trp	Leu	Val															
180				185						190			195																	
ttt	aag	cag	cct	cta	gcg	ttt	gtt	ttg	ttt	ttg	atc	gca	agt	tat	gcc	679														
Phe	Lys	Gln	Pro	Leu	Ala	Phe	Val	Leu	Phe	Leu	Ile	Ala	Ser	Tyr	Ala															
			200						205			210																		
gaa	ttg	aat	cga	acc	ccc	ttt	gac	ttg	cta	gag	cat	gaa	gcc	gag	atc	727														
Glu	Leu	Asn	Arg	Thr	Pro	Phe	Asp	Leu	Leu	Glu	His	Glu	Ala	Glu	Ile															
215						220						225																		
gtg	gcg	ggg	tat	tgc	acc	gaa	tac	agc	ggc	ttg	aaa	tgg	ggc	atg	ttc	775														
Val	Ala	Gly	Tyr	Cys	Thr	Glu	Tyr	Ser	Gly	Leu	Lys	Trp	Gly	Met	Phe															
230						235						240																		
ttt	tta	gcg	gaa	tac	gcg	cat	tta	ttc	gct	ttt	tct	ttt	gtg	att	tct	823														
Phe	Leu	Ala	Glu	Tyr	Ala	His	Leu	Phe	Ala	Phe	Ser	Phe	Val	Ile	Ser															
245						250						255																		
att	gtg	ttt	ttt	ggc	ggg	ttt	aac	gca	tgg	ggc	ttt	atc	cct	gga	ggc	871														
Ile	Val	Phe	Phe	Gly	Gly	Phe	Asn	Ala	Trp	Gly	Phe	Ile	Pro	Gly	Gly															
260				265						270			275																	
ata	gcg	att	ttg	att	aaa	gcg	ggc	ttt	ttt	gtc	ttt	tta	tcc	atg	tgg	919														

Ile Ala Ile Leu Ile Lys Ala Gly Phe Phe Val Phe Leu Ser Met Trp
 280 285 290

gtt aga gcg act tat ccg cat gtg cgc cca gac caa ctg atg gat atg 967
 Val Arg Ala Thr Tyr Pro His Val Arg Pro Asp Gln Leu Met Asp Met
 295 300 305

tgc tgg aaa atc atg ctg cct tta gcg tta ttg aac att gtg cta acg 1015
 Cys Trp Lys Ile Met Leu Pro Leu Ala Leu Leu Asn Ile Val Leu Thr
 310 315 320

ggc att atc att tta att taaaggaggt tttatggcca aacaagaata 1063
 Gly Ile Ile Ile Leu Ile
 325

caagcaactt cctaaac 1080

<210> 170
 <211> 329
 <212> PRT
 <213> Helicobacter pylori

<400> 170
 Met Ser Ala Tyr Ile Ile Glu Thr Leu Ile Lys Ile Leu Ile Leu Val
 1 5 10 15
 Ala Val Phe Ser Ala Leu Gly Gly Phe Ala Thr Tyr Ile Glu Arg Lys
 20 25 30
 Val Leu Ala Tyr Phe Gln Arg Arg Leu Gly Pro Cys Tyr Val Gly Pro
 35 40 45
 Phe Gly Leu Leu Gln Val Ala Ala Asp Gly Ile Lys Leu Phe Thr Lys
 50 55 60
 Glu Asp Ile Ile Pro Gln Gly Ala Asn Lys Phe Ile Phe Thr Leu Ala
 65 70 75 80
 Pro Ile Ile Ala Met Val Ser Ala Phe Val Ser Met Ala Pro Ile Pro
 85 90 95
 Phe Phe Pro Asn Phe Thr Leu Phe Gly Tyr Glu Ile Lys Pro Leu Ile
 100 105 110
 Ser Asp Ile Asn Ile Gly Phe Leu Phe Phe Leu Ala Val Gly Ser Ala
 115 120 125
 Gly Ile Tyr Ala Pro Ile Leu Ala Gly Leu Ala Ser Asn Asn Lys Tyr
 130 135 140
 Ser Leu Ile Gly Ser Ala Arg Ala Thr Ile Gln Leu Leu Ser Phe Glu
 145 150 155 160
 Val Val Ser Thr Leu Thr Ile Leu Ala Pro Leu Met Val Val Gly Ser
 165 170 175
 Leu Ser Leu Val Glu Ile Asn His Tyr Gln Ser Gly Gly Phe Leu Asp
 180 185 190
 Trp Leu Val Phe Lys Gln Pro Leu Ala Phe Val Leu Phe Leu Ile Ala
 195 200 205
 Ser Tyr Ala Glu Leu Asn Arg Thr Pro Phe Asp Leu Leu Glu His Glu
 210 215 220
 Ala Glu Ile Val Ala Gly Tyr Cys Thr Glu Tyr Ser Gly Leu Lys Trp
 225 230 235 240
 Gly Met Phe Phe Leu Ala Glu Tyr Ala His Leu Phe Ala Phe Ser Phe
 245 250 255

Val	Ile	Ser	Ile	Val	Phe	Phe	Gly	Gly	Phe	Asn	Ala	Trp	Gly	Phe	Ile
			260					265					270		
Pro	Gly	Gly	Ile	Ala	Ile	Leu	Ile	Lys	Ala	Gly	Phe	Phe	Val	Phe	Leu
		275					280					285			
Ser	Met	Trp	Val	Arg	Ala	Thr	Tyr	Pro	His	Val	Arg	Pro	Asp	Gln	Leu
	290					295					300				
Met	Asp	Met	Cys	Trp	Lys	Ile	Met	Leu	Pro	Leu	Ala	Leu	Leu	Asn	Ile
305					310					315					320
Val	Leu	Thr	Gly	Ile	Ile	Ile	Leu	Ile							
				325											

<210> 171
 <211> 1280
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (48)...(1226)

<400> 171	
taaggataaa atcaagcgat tagcccgaat tttaagagag tattaag atg aat aaa	56
	Met Asn Lys
	1
aaa gcg tat ttt ggg gag ttt gga ggg agt ttt gtt tcg gag ttg tta	104
Lys Ala Tyr Phe Gly Glu Phe Gly Gly Ser Phe Val Ser Glu Leu Leu	
5 10 15	
gtg cct gca tta aga gaa tta gaa cag gcg ttt gat gcg tgt ttg aaa	152
Val Pro Ala Leu Arg Glu Leu Glu Gln Ala Phe Asp Ala Cys Leu Lys	
20 25 30 35	
gat gaa aaa ttc caa aaa gaa tat ttt cgt ctt tta aag gat ttt gtg	200
Asp Glu Lys Phe Gln Lys Glu Tyr Phe Arg Leu Leu Lys Asp Phe Val	
40 45 50	
ggc cgt cct agc cct tta acc ttg tgt caa aat atc gtt tct aac cct	248
Gly Arg Pro Ser Pro Leu Thr Leu Cys Gln Asn Ile Val Ser Asn Pro	
55 60 65	
aaa gtc aag ctt tat tta aaa cga gag gat tta atc cat ggc ggg gcg	296
Lys Val Lys Leu Tyr Leu Lys Arg Glu Asp Leu Ile His Gly Gly Ala	
70 75 80	
cat aag act aat caa gcc tta ggg caa gcc ctt tta gcg aaa aaa atg	344
His Lys Thr Asn Gln Ala Leu Gly Gln Ala Leu Leu Ala Lys Lys Met	
85 90 95	
ggg aaa aca agg atc atc gct gaa aca ggc gcc ggt cag cat ggc gtg	392
Gly Lys Thr Arg Ile Ile Ala Glu Thr Gly Ala Gly Gln His Gly Val	
100 105 110 115	
gcg acg gct atc gct tgc gca tta ttg aac tta aaa tgc gtg gtt ttt	440

Ala Thr Ala Ile Ala Cys Ala Leu Leu Asn Leu Lys Cys Val Val Phe	
120 125 130	
atg gga tct aaa gac atc aag cgc cag gaa atg aat gtt ttt aga atg	488
Met Gly Ser Lys Asp Ile Lys Arg Gln Glu Met Asn Val Phe Arg Met	
135 140 145	
cac tta tta ggc gct gaa gtg aga gag gtt aat tca ggg agc gcg acg	536
His Leu Leu Gly Ala Glu Val Arg Glu Val Asn Ser Gly Ser Ala Thr	
150 155 160	
ctt aaa gac gct gtg aat gaa gcc tta aga gat tgg gcg agc agt tac	584
Leu Lys Asp Ala Val Asn Glu Ala Leu Arg Asp Trp Ala Ser Ser Tyr	
165 170 175	
aag gac acg cat tat ttg cta ggc aca gcc gcc ggg cca cac cct tac	632
Lys Asp Thr His Tyr Leu Leu Gly Thr Ala Ala Gly Pro His Pro Tyr	
180 185 190 195	
ccc aca atg gtt aaa acc ttt caa aaa atg ata ggc gat gag gtt aaa	680
Pro Thr Met Val Lys Thr Phe Gln Lys Met Ile Gly Asp Glu Val Lys	
200 205 210	
agc cag att tta gaa aaa gaa aac cgc ttg cct gat tat gtg atc gca	728
Ser Gln Ile Leu Glu Lys Glu Asn Arg Leu Pro Asp Tyr Val Ile Ala	
215 220 225	
tgc gtt gga ggg ggg tct aac gct ata ggg ata ttc agc gca ttt tta	776
Cys Val Gly Gly Ser Asn Ala Ile Gly Ile Phe Ser Ala Phe Leu	
230 235 240	
aac gac aaa gaa gtt aaa ctc ata ggc gta gag ccg gcg ggt tta ggg	824
Asn Asp Lys Glu Val Lys Leu Ile Gly Val Glu Pro Ala Gly Leu Gly	
245 250 255	
cta gaa acc aat aag cat ggg gcg act ttg aat aag ggg cgt gtg ggg	872
Leu Glu Thr Asn Lys His Gly Ala Thr Leu Asn Lys Gly Arg Val Gly	
260 265 270 275	
att ttg cat ggg aat aaa acc tat ctt tta caa gat gat gaa ggc cag	920
Ile Leu His Gly Asn Lys Thr Tyr Leu Leu Gln Asp Asp Glu Gly Gln	
280 285 290	
att gca gaa agc cat agc att agc gcc ggg ctt gat tat cca gga gtg	968
Ile Ala Glu Ser His Ser Ile Ser Ala Gly Leu Asp Tyr Pro Gly Val	
295 300 305	
ggg cca gaa cac agc tat tta aaa gaa agt ggg cgt gcg gtt tat gaa	1016
Gly Pro Glu His Ser Tyr Leu Lys Glu Ser Gly Arg Ala Val Tyr Glu	
310 315 320	
agc gca agc gat gct gaa gcg cta gaa gcc ttc aag ttg ttg tgc caa	1064
Ser Ala Ser Asp Ala Glu Ala Leu Glu Ala Phe Lys Leu Leu Cys Gln	
325 330 335	

aaa gaa ggc att atc cca gcg cta gaa agc tca cac gcc tta gcg tat 1112
 Lys Glu Gly Ile Ile Pro Ala Leu Glu Ser Ser His Ala Leu Ala Tyr
 340 345 350 355

gcc tta aag ctc gct caa aaa tgc gaa gaa gaa agc atc atc gta gtg 1160
 Ala Leu Lys Leu Ala Gln Lys Cys Glu Glu Glu Ser Ile Ile Val Val
 360 365 370

aat tta agc ggc aga ggg gat aag gat tta agc acc gtt tat aac gct 1208
 Asn Leu Ser Gly Arg Gly Asp Lys Asp Leu Ser Thr Val Tyr Asn Ala
 375 380 385

tta aaa gga ggt tta aaa tgaggtatca aaacatgttt gaaaccttaa 1256
 Leu Lys Gly Gly Leu Lys
 390

aaaaacacga aaaaatggcg tttta 1280

<210> 172
 <211> 393
 <212> PRT
 <213> Helicobacter pylori

<400> 172
 Met Asn Lys Lys Ala Tyr Phe Gly Glu Phe Gly Gly Ser Phe Val Ser
 1 5 10 15
 Glu Leu Leu Val Pro Ala Leu Arg Glu Leu Glu Gln Ala Phe Asp Ala
 20 25 30
 Cys Leu Lys Asp Glu Lys Phe Gln Lys Glu Tyr Phe Arg Leu Leu Lys
 35 40 45
 Asp Phe Val Gly Arg Pro Ser Pro Leu Thr Leu Cys Gln Asn Ile Val
 50 55 60
 Ser Asn Pro Lys Val Lys Leu Tyr Leu Lys Arg Glu Asp Leu Ile His
 65 70 75 80
 Gly Gly Ala His Lys Thr Asn Gln Ala Leu Gly Gln Ala Leu Leu Ala
 85 90 95
 Lys Lys Met Gly Lys Thr Arg Ile Ile Ala Glu Thr Gly Ala Gly Gln
 100 105 110
 His Gly Val Ala Thr Ala Ile Ala Cys Ala Leu Leu Asn Leu Lys Cys
 115 120 125
 Val Val Phe Met Gly Ser Lys Asp Ile Lys Arg Gln Glu Met Asn Val
 130 135 140
 Phe Arg Met His Leu Leu Gly Ala Glu Val Arg Glu Val Asn Ser Gly
 145 150 155 160
 Ser Ala Thr Leu Lys Asp Ala Val Asn Glu Ala Leu Arg Asp Trp Ala
 165 170 175
 Ser Ser Tyr Lys Asp Thr His Tyr Leu Leu Gly Thr Ala Ala Gly Pro
 180 185 190
 His Pro Tyr Pro Thr Met Val Lys Thr Phe Gln Lys Met Ile Gly Asp
 195 200 205
 Glu Val Lys Ser Gln Ile Leu Glu Lys Glu Asn Arg Leu Pro Asp Tyr
 210 215 220
 Val Ile Ala Cys Val Gly Gly Gly Ser Asn Ala Ile Gly Ile Phe Ser
 225 230 235 240
 Ala Phe Leu Asn Asp Lys Glu Val Lys Leu Ile Gly Val Glu Pro Ala

ttt aag gct agg ttt ttt ggc gcg ttt tat aac gct gtg tta gga tca 342
 Phe Lys Ala Arg Phe Phe Gly Ala Phe Tyr Asn Ala Val Leu Gly Ser
 90 95 100

agg cta agg gat ttt tat gtg atg ctt tta acg ata ccc ttt att gcc 390
 Arg Leu Arg Asp Phe Tyr Val Met Leu Leu Thr Ile Pro Phe Ile Ala
 105 110 115 120

gct atc cat gag gtt tcg gcg tat tac ggg cat cct agc aac ttc ctt 438
 Ala Ile His Glu Val Ser Ala Tyr Tyr Gly His Pro Ser Asn Phe Leu
 125 130 135

ata gag ggt ttg gtc att ctt ggc ctt gtg tgt gtt ttt ggg att tgt 486
 Ile Glu Gly Leu Val Ile Leu Gly Leu Val Cys Val Phe Gly Ile Cys
 140 145 150

tct agg ctt tgc gct aaa tta ggg tgg tgatttaact caaatagcat 533
 Ser Arg Leu Cys Ala Lys Leu Gly Trp
 155 160

taaatggagg ggggagtaaa aaatta 559

<210> 174

<211> 161

<212> PRT

<213> Helicobacter pylori

<400> 174

Met Asn Val Lys Asn Arg Leu Ser Asp Trp Glu Tyr Gln Trp Ala Val
 1 5 10 15
 Ala Leu Val Tyr Thr Ile Cys Ile Ser Ile Asn Ala Arg Ile Phe Tyr
 20 25 30
 Asp Ile Asp Gly Ser Ala Ser Asp Ser Ile Phe Asp Pro Lys Asn Ser
 35 40 45
 Tyr Tyr Met Trp Leu Val Gly Leu Ile Ala Ala Leu Leu Ser Asn Leu
 50 55 60
 Leu Phe Asp Pro Arg Gly Arg Asp Cys Tyr Lys Ser Phe Gln Val Arg
 65 70 75 80
 Tyr Pro Arg Phe Leu Lys Ala Ile Phe Lys Ala Arg Phe Phe Gly Ala
 85 90 95
 Phe Tyr Asn Ala Val Leu Gly Ser Arg Leu Arg Asp Phe Tyr Val Met
 100 105 110
 Leu Leu Thr Ile Pro Phe Ile Ala Ala Ile His Glu Val Ser Ala Tyr
 115 120 125
 Tyr Gly His Pro Ser Asn Phe Leu Ile Glu Gly Leu Val Ile Leu Gly
 130 135 140
 Leu Val Cys Val Phe Gly Ile Cys Ser Arg Leu Cys Ala Lys Leu Gly
 145 150 155 160
 Trp

<210> 175

<211> 810

<212> DNA

<213> Helicobacter pylori

<220>

<221> CDS

<222> (53)...(712)

<400> 175

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Met Leu
1

ata acc acc caa cta tcc aaa cga ttt tac gcc aca ctc gct ctt tct 106
Ile Thr Thr Gln Leu Ser Lys Arg Phe Tyr Ala Thr Leu Ala Leu Ser
5 10 15

tgc gtg ttt tta acc atc act aac att ctt gtc aaa ggc tcg ttt atc 154
Cys Val Phe Leu Thr Ile Thr Asn Ile Leu Val Lys Gly Ser Phe Ile
20 25 30

aat ctt tta gca ggg ctt agt ggg gtt ttg tat gcg ttt ttt gcc gga 202
Asn Leu Leu Ala Gly Leu Ser Gly Val Leu Tyr Ala Phe Phe Ala Gly
35 40 45 50

gaa agg caa acg att tgc ttt gtg ttt ggt ctt gtt tat aat ttg agt 250
Glu Arg Gln Thr Ile Cys Phe Val Phe Gly Leu Val Tyr Asn Leu Ser
55 60 65

tac gct tat gtc gct tat cag tgg aaa tta aac gct gat gtg att tta 298
Tyr Ala Tyr Val Ala Tyr Gln Trp Lys Leu Asn Ala Asp Val Ile Leu
70 75 80

tgc ctt ttt ttg tat atg cca gta acg att tat ggg ctg ttc gca tgg 346
Cys Leu Phe Leu Tyr Met Pro Val Thr Ile Tyr Gly Leu Phe Ala Trp
85 90 95

aaa aag aca gag cag cat gaa ggc gtt atc aag gct caa aaa ctt tcc 394
Lys Lys Thr Glu Gln His Glu Gly Val Ile Lys Ala Gln Lys Leu Ser
100 105 110

aaa aat tgg cgt ttt ata ctc att tta ggc gta ggg gtt tta act tgt 442
Lys Asn Trp Arg Phe Ile Leu Ile Leu Gly Val Gly Val Leu Thr Cys
115 120 125 130

gtg agc gct ttg ttt ttt aaa gag att aaa acg aat ttt tta tgg gca 490
Val Ser Ala Leu Phe Phe Lys Glu Ile Lys Thr Asn Phe Leu Trp Ala
135 140 145

gag agt ttt aat ttc gtc atc ttt att att gct ttt att tta cag gtt 538
Glu Ser Phe Asn Phe Val Ile Phe Ile Ile Ala Phe Ile Leu Gln Val
150 155 160

ttg cgc tat ata gaa aat tat gcg cta gta act ttg ggg aat atc gta 586
Leu Arg Tyr Ile Glu Asn Tyr Ala Leu Val Thr Leu Gly Asn Ile Val
165 170 175

tcc att atc gtg tgg ttt tgt att ttt caa att tct aca gag agc ttg 634
 Ser Ile Ile Val Trp Phe Cys Ile Phe Gln Ile Ser Thr Glu Ser Leu
 180 185 190

gtg caa ctc ttc aca acg atc cta tac ctt ttt att ggc ttg tat tat 682
 Val Gln Leu Phe Thr Thr Ile Leu Tyr Leu Phe Ile Gly Leu Tyr Tyr
 195 200 205 210

ttt aac cgg tgg aat aag tca tgc aag cag tgatttttagc gaatggggag 732
 Phe Asn Arg Trp Asn Lys Ser Cys Lys Gln
 215 220

tttcctaaat ctcaaaaatg cttagacctt ttaaaaaacg ctcccttttt aatcgcatgc 792
 gatggggctg ttacctca 810

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 <212> PRT
 <213> Helicobacter pylori

<400> 176
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 Phe Ile Asn Leu Leu Ala Gly Leu Ser Gly Val Leu Tyr Ala Phe Phe
 35 40 45
 Ala Gly Glu Arg Gln Thr Ile Cys Phe Val Phe Gly Leu Val Tyr Asn
 50 55 60
 Leu Ser Tyr Ala Tyr Val Ala Tyr Gln Trp Lys Leu Asn Ala Asp Val
 65 70 75 80
 Ile Leu Cys Leu Phe Leu Tyr Met Pro Val Thr Ile Tyr Gly Leu Phe
 85 90 95
 Ala Trp Lys Lys Thr Glu Gln His Glu Gly Val Ile Lys Ala Gln Lys
 100 105 110
 Leu Ser Lys Asn Trp Arg Phe Ile Leu Ile Leu Gly Val Gly Val Leu
 115 120 125
 Thr Cys Val Ser Ala Leu Phe Phe Lys Glu Ile Lys Thr Asn Phe Leu
 130 135 140
 Trp Ala Glu Ser Phe Asn Phe Val Ile Phe Ile Ile Ala Phe Ile Leu
 145 150 155 160
 Gln Val Leu Arg Tyr Ile Glu Asn Tyr Ala Leu Val Thr Leu Gly Asn
 165 170 175
 Ile Val Ser Ile Ile Val Trp Phe Cys Ile Phe Gln Ile Ser Thr Glu
 180 185 190
 Ser Leu Val Gln Leu Phe Thr Thr Ile Leu Tyr Leu Phe Ile Gly Leu
 195 200 205
 Tyr Tyr Phe Asn Arg Trp Asn Lys Ser Cys Lys Gln
 210 215 220

<210> 177
 <211> 451
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 <213> Helicobacter pylori

<220>

<221> CDS

<222> (51)...(398)

<400> 177

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cac aaa cac gga tac cgc aag ctt ggg aga acc agc tcg cac aga aag 104
His Lys His Gly Tyr Arg Lys Leu Gly Arg Thr Ser Ser His Arg Lys
      5                      10                      15

gcg tta tta aag aat tta gcg atc gct ttg att gag cat aac aaa att 152
Ala Leu Leu Lys Asn Leu Ala Ile Ala Leu Ile Glu His Asn Lys Ile
      20                      25                      30

gaa aca ggg att tat aag gct aag gaa ttg cgc agt tac att gag aaa 200
Glu Thr Gly Ile Tyr Lys Ala Lys Glu Leu Arg Ser Tyr Ile Glu Lys
      35                      40                      45                      50

ttg acg aca gcg gct cgt gtg ggc gat ttt aat gcg cac cgc cat gtt 248
Leu Thr Thr Ala Ala Arg Val Gly Asp Phe Asn Ala His Arg His Val
                      55                      60                      65

ttt gca tat ttg caa aac aaa gaa gcc acc cac aag ctt gta act gaa 296
Phe Ala Tyr Leu Gln Asn Lys Glu Ala Thr His Lys Leu Val Thr Glu
                      70                      75                      80

atc gcg ccc aaa tac gcg caa agg aat ggc gga tac acc agg atc caa 344
Ile Ala Pro Lys Tyr Ala Gln Arg Asn Gly Gly Tyr Thr Arg Ile Gln
      85                      90                      95

cgc acc act ttt aga aga ggg gac gct tcc act cta gcc acc att gaa 392
Arg Thr Thr Phe Arg Arg Gly Asp Ala Ser Thr Leu Ala Thr Ile Glu
      100                      105                      110

ttt gta tgaaatttga tgaactgcta gccaaagattt agtcttggtt ggtggttattc 448
Phe Val
115

gct 451
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<210> 178

<211> 116

<212> PRT

<213> *Helicobacter pylori*

<400> 178

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Arg Lys Ala Leu Leu Lys Asn Leu Ala Ile Ala Leu Ile Glu His Asn
      20      25      30
Lys Ile Glu Thr Gly Ile Tyr Lys Ala Lys Glu Leu Arg Ser Tyr Ile
      35      40      45
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Glu	Lys	Leu	Thr	Thr	Ala	Ala	Arg	Val	Gly	Asp	Phe	Asn	Ala	His	Arg
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His	Val	Phe	Ala	Tyr	Leu	Gln	Asn	Lys	Glu	Ala	Thr	His	Lys	Leu	Val
65					70					75					80
Thr	Glu	Ile	Ala	Pro	Lys	Tyr	Ala	Gln	Arg	Asn	Gly	Gly	Tyr	Thr	Arg
				85					90					95	
Ile	Gln	Arg	Thr	Thr	Phe	Arg	Arg	Gly	Asp	Ala	Ser	Thr	Leu	Ala	Thr
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			115												

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 <213> Helicobacter pylori

<220>
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 <222> (36)...(1142)

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gaa att tta gaa gtg gaa aaa cac agc aac caa gag acc att aaa aag	101
Glu Ile Leu Glu Val Glu Lys His Ser Asn Gln Glu Thr Ile Lys Lys	
10 15 20	
tct tac aga aag ctg gct tta aaa tac cac cca gac aga aac gcc ggc	149
Ser Tyr Arg Lys Leu Ala Leu Lys Tyr His Pro Asp Arg Asn Ala Gly	
25 30 35	
gat aaa gaa gcc gaa gaa aaa ttc aag ctc atc aat gaa gcc tat ggg	197
Asp Lys Glu Ala Glu Glu Lys Phe Lys Leu Ile Asn Glu Ala Tyr Gly	
40 45 50	
gtg tta agc gat gaa aag aag cgg gcc tta tac gac agg tat ggt aaa	245
Val Leu Ser Asp Glu Lys Lys Arg Ala Leu Tyr Asp Arg Tyr Gly Lys	
55 60 65 70	
aaa ggc tta aac caa gcc ggc gca agc caa ggc gat ttt tct gat ttt	293
Lys Gly Leu Asn Gln Ala Gly Ala Ser Gln Gly Asp Phe Ser Asp Phe	
75 80 85	
ttt gaa gat tta ggc tcg ttt ttt gaa gac gct ttt ggg ttt ggc gct	341
Phe Glu Asp Leu Gly Ser Phe Phe Glu Asp Ala Phe Gly Phe Gly Ala	
90 95 100	
agg ggg agt aaa agg caa aaa agc tct atc gca ccg gat tat ttg caa	389
Arg Gly Ser Lys Arg Gln Lys Ser Ser Ile Ala Pro Asp Tyr Leu Gln	
105 110 115	
acc ctt gaa ttg agt ttc aaa gaa gcg gtt ttt ggc tgt aaa aaa acc	437

Thr	Leu	Glu	Leu	Ser	Phe	Lys	Glu	Ala	Val	Phe	Gly	Cys	Lys	Lys	Thr		
120						125					130						
att	aaa	gtc	caa	tac	cag	agc	ggt	tgt	gaa	agt	tgc	gat	ggc	acg	ggc	485	
Ile	Lys	Val	Gln	Tyr	Gln	Ser	Val	Cys	Glu	Ser	Cys	Asp	Gly	Thr	Gly		
135					140					145					150		
gct	aaa	gac	aaa	gcc	cta	gag	act	tgc	aag	caa	tgc	aat	ggg	cag	ggg	533	
Ala	Lys	Asp	Lys	Ala	Leu	Glu	Thr	Cys	Lys	Gln	Cys	Asn	Gly	Gln	Gly		
				155					160					165			
cag	gtg	ttt	atg	cgt	caa	ggt	ttt	atg	agt	ttt	gcg	caa	act	tgt	ggg	581	
Gln	Val	Phe	Met	Arg	Gln	Gly	Phe	Met	Ser	Phe	Ala	Gln	Thr	Cys	Gly		
			170					175					180				
gcg	tgt	caa	ggc	aag	ggc	aag	atc	ggt	aaa	acc	cca	tgc	caa	gcg	tgc	629	
Ala	Cys	Gln	Gly	Lys	Gly	Lys	Ile	Val	Lys	Thr	Pro	Cys	Gln	Ala	Cys		
		185					190					195					
aag	ggt	aaa	acc	tat	atc	ctt	aaa	gat	gaa	gaa	att	gat	gcg	ata	atc	677	
Lys	Gly	Lys	Thr	Tyr	Ile	Leu	Lys	Asp	Glu	Glu	Ile	Asp	Ala	Ile	Ile		
	200					205					210						
cct	gag	ggc	att	gat	gat	caa	aac	cgc	atg	gtg	ctt	aaa	aat	aaa	ggc	725	
Pro	Glu	Gly	Ile	Asp	Asp	Gln	Asn	Arg	Met	Val	Leu	Lys	Asn	Lys	Gly		
215					220					225					230		
aat	gaa	tac	gag	aag	gga	aaa	aga	ggg	gat	ttg	tat	tta	gaa	gcg	caa	773	
Asn	Glu	Tyr	Glu	Lys	Gly	Lys	Arg	Gly	Asp	Leu	Tyr	Leu	Glu	Ala	Gln		
				235					240					245			
gtc	aaa	gaa	gat	gag	cat	ttc	aag	cgc	gaa	ggc	tgc	gat	tta	ttc	att	821	
Val	Lys	Glu	Asp	Glu	His	Phe	Lys	Arg	Glu	Gly	Cys	Asp	Leu	Phe	Ile		
			250					255					260				
aaa	gcg	ccg	gtg	ttt	ttc	acc	act	atc	gct	tta	ggg	cat	acg	att	aaa	869	
Lys	Ala	Pro	Val	Phe	Phe	Thr	Thr	Ile	Ala	Leu	Gly	His	Thr	Ile	Lys		
	265						270					275					
gtg	ccg	tct	tta	aaa	ggg	gac	gaa	ctg	gaa	tta	aaa	atc	cct	aga	aac	917	
Val	Pro	Ser	Leu	Lys	Gly	Asp	Glu	Leu	Glu	Leu	Lys	Ile	Pro	Arg	Asn		
	280					285					290						
gcc	aga	gac	aag	cag	act	ttt	gcg	ttt	aga	aac	gag	ggc	gtg	aaa	cac	965	
Ala	Arg	Asp	Lys	Gln	Thr	Phe	Ala	Phe	Arg	Asn	Glu	Gly	Val	Lys	His		
295					300					305					310		
cct	gaa	agc	tct	tat	aga	ggg	agt	ttg	atc	gtg	gaa	ttg	caa	gtg	att	1013	
Pro	Glu	Ser	Ser	Tyr	Arg	Gly	Ser	Leu	Ile	Val	Glu	Leu	Gln	Val	Ile		
				315					320					325			
tac	cct	aaa	agt	ttg	aat	aaa	gag	cag	caa	gaa	ttg	ttg	gaa	aaa	ttg	1061	
Tyr	Pro	Lys	Ser	Leu	Asn	Lys	Glu	Gln	Gln	Glu	Leu	Leu	Glu	Lys	Leu		
			330					335					340				

cat gcg agt ttt ggc tat gag ggc gag ccg cat aaa agc gtt tta gaa 1109
 His Ala Ser Phe Gly Tyr Glu Gly Glu Pro His Lys Ser Val Leu Glu
 345 350 355

acc tgt att tct aaa att aaa gac tgg ttc aaa taaaagggttg ttgatgcatg 1162
 Thr Cys Ile Ser Lys Ile Lys Asp Trp Phe Lys
 360 365

agttttctaaa agctttttaaa gacgctttcc ctcataccat tt 1204

<210> 180
 <211> 369
 <212> PRT
 <213> Helicobacter pylori

<400> 180
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 Gln Glu Thr Ile Lys Lys Ser Tyr Arg Lys Leu Ala Leu Lys Tyr His
 20 25 30
 Pro Asp Arg Asn Ala Gly Asp Lys Glu Ala Glu Glu Lys Phe Lys Leu
 35 40 45
 Ile Asn Glu Ala Tyr Gly Val Leu Ser Asp Glu Lys Lys Arg Ala Leu
 50 55 60
 Tyr Asp Arg Tyr Gly Lys Lys Gly Leu Asn Gln Ala Gly Ala Ser Gln
 65 70 75 80
 Gly Asp Phe Ser Asp Phe Phe Glu Asp Leu Gly Ser Phe Phe Glu Asp
 85 90 95
 Ala Phe Gly Phe Gly Ala Arg Gly Ser Lys Arg Gln Lys Ser Ser Ile
 100 105 110
 Ala Pro Asp Tyr Leu Gln Thr Leu Glu Leu Ser Phe Lys Glu Ala Val
 115 120 125
 Phe Gly Cys Lys Lys Thr Ile Lys Val Gln Tyr Gln Ser Val Cys Glu
 130 135 140
 Ser Cys Asp Gly Thr Gly Ala Lys Asp Lys Ala Leu Glu Thr Cys Lys
 145 150 155 160
 Gln Cys Asn Gly Gln Gly Gln Val Phe Met Arg Gln Gly Phe Met Ser
 165 170 175
 Phe Ala Gln Thr Cys Gly Ala Cys Gln Gly Lys Gly Lys Ile Val Lys
 180 185 190
 Thr Pro Cys Gln Ala Cys Lys Gly Lys Thr Tyr Ile Leu Lys Asp Glu
 195 200 205
 Glu Ile Asp Ala Ile Ile Pro Glu Gly Ile Asp Asp Gln Asn Arg Met
 210 215 220
 Val Leu Lys Asn Lys Gly Asn Glu Tyr Glu Lys Gly Lys Arg Gly Asp
 225 230 235 240
 Leu Tyr Leu Glu Ala Gln Val Lys Glu Asp Glu His Phe Lys Arg Glu
 245 250 255
 Gly Cys Asp Leu Phe Ile Lys Ala Pro Val Phe Phe Thr Thr Ile Ala
 260 265 270
 Leu Gly His Thr Ile Lys Val Pro Ser Leu Lys Gly Asp Glu Leu Glu
 275 280 285
 Leu Lys Ile Pro Arg Asn Ala Arg Asp Lys Gln Thr Phe Ala Phe Arg
 290 295 300
 Asn Glu Gly Val Lys His Pro Glu Ser Ser Tyr Arg Gly Ser Leu Ile

	130	135	140	
	gaa acc caa gat gaa ttg cat ata aga ggc gat tca gag cgt ttt tgg			482
	Glu Thr Gln Asp Glu Leu His Ile Arg Gly Asp Ser Glu Arg Phe Trp			
	145	150	155	
	gaa ctc att gta acg ctc aat gaa aat aga atc gtc cat aac gca tgc			530
	Glu Leu Ile Val Thr Leu Asn Glu Asn Arg Ile Val His Asn Ala Cys			
	160	165	170	
	tta gat ttc atc tac cct aat ggc ttt ggc aag gac agc tac acc act			578
	Leu Asp Phe Ile Tyr Pro Asn Gly Phe Gly Lys Asp Ser Tyr Thr Thr			
	175	180	185	
	atg gct gaa cgc aaa tta aaa gaa tgc tat aaa acg cta ggg ttt atc			626
	Met Ala Glu Arg Lys Leu Lys Glu Cys Tyr Lys Thr Leu Gly Phe Ile			
	190	195	200	205
	aag cat gaa gat ttc agc gaa gtc aaa aag cgc tat tta gaa ttg gct			674
	Lys His Glu Asp Phe Ser Glu Val Lys Lys Arg Tyr Leu Glu Leu Ala			
	210	215	220	
	aaa acc tac cac cct gat tta tgc gat ctc aaa gaa aaa aag gct ctt			722
	Lys Thr Tyr His Pro Asp Leu Cys Asp Leu Lys Glu Lys Lys Ala Leu			
	225	230	235	
	tat gcc aaa cgc ttc gct atc att caa gag gcg tat cgc cac att aaa			770
	Tyr Ala Lys Arg Phe Ala Ile Ile Gln Glu Ala Tyr Arg His Ile Lys			
	240	245	250	
	aaa cac gcc taaacccta aactagccct aatcgcgcta g			810
	Lys His Ala			
	255			

<210> 182

<211> 256

<212> PRT

<213> Helicobacter pylori

<400> 182

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Lys Lys His Phe Ser Gln Cys His Met Leu Ser Ser Ser Leu Leu Ile	
35 40 45	
Leu Asn Asp Thr Glu Cys Phe Lys Lys Asn Tyr Leu Leu Asn Trp Val	
50 55 60	
Tyr His Ala Leu Glu Cys Val His Glu Lys Asp Ile Ser Ala His Ser	
65 70 75 80	
Leu Glu Glu Val Leu Gln Lys Ser His Leu Pro Ile Arg Ile Lys Ile	
85 90 95	
Met Ala Gln Asn Thr Leu Leu Glu Lys Ile Glu Val Lys Val Leu Thr	
100 105 110	

Phe	Gly	Ala	Glu	Tyr	Ala	Leu	Phe	Ile	Thr	Lys	His	Pro	Ile	Ala	Lys
	115						120					125			
Arg	Phe	Leu	Arg	Gln	Lys	Phe	Ser	Gly	Cys	Val	Phe	Leu	Glu	Thr	Gln
	130						135					140			
Asp	Glu	Leu	His	Ile	Arg	Gly	Asp	Ser	Glu	Arg	Phe	Trp	Glu	Leu	Ile
145					150					155					160
Val	Thr	Leu	Asn	Glu	Asn	Arg	Ile	Val	His	Asn	Ala	Cys	Leu	Asp	Phe
			165						170					175	
Ile	Tyr	Pro	Asn	Gly	Phe	Gly	Lys	Asp	Ser	Tyr	Thr	Thr	Met	Ala	Glu
		180						185					190		
Arg	Lys	Leu	Lys	Glu	Cys	Tyr	Lys	Thr	Leu	Gly	Phe	Ile	Lys	His	Glu
	195						200					205			
Asp	Phe	Ser	Glu	Val	Lys	Lys	Arg	Tyr	Leu	Glu	Leu	Ala	Lys	Thr	Tyr
	210					215					220				
His	Pro	Asp	Leu	Cys	Asp	Leu	Lys	Glu	Lys	Lys	Ala	Leu	Tyr	Ala	Lys
225					230					235					240
Arg	Phe	Ala	Ile	Ile	Gln	Glu	Ala	Tyr	Arg	His	Ile	Lys	Lys	His	Ala
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<210> 183
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 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (59)...(778)

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Met Lys Ser Asn Lys Lys Ser Asn Arg Leu Arg Ala Ile Tyr Arg Ala															
1 5 10 15															
tta gtg atc gct ata gga cta gct gtt atc atc gtt ttc aat tac ttt															154
Leu Val Ile Ala Ile Gly Leu Ala Val Ile Ile Val Phe Asn Tyr Phe															
20 25 30															
aac cgc aaa aac aat aac gcc cgc tcc agc cgt agg gct tgt tcg tgc															202
Asn Arg Lys Asn Asn Asn Ala Arg Ser Ser Arg Arg Ala Cys Ser Cys															
35 40 45															
ttt ttt tcc ctt acc ggg gtt aat tta gaa aaa ata ggc act ttt gat															250
Phe Phe Ser Leu Thr Gly Val Asn Leu Glu Lys Ile Gly Thr Phe Asp															
50 55 60															
acg gac gct aaa ctc att gtc tta aac cac caa agc tta cta gac atc															298
Thr Asp Ala Lys Leu Ile Val Leu Asn His Gln Ser Leu Leu Asp Ile															
65 70 75 80															
att tat tta gaa gcc tac cac cct aga aat att tgc tgg atc gct aaa															346
Ile Tyr Leu Glu Ala Tyr His Pro Arg Asn Ile Cys Trp Ile Ala Lys															
85 90 95															

aaa gag ctg ggc gaa atc cct ttt tat ggg cat gcc tta acg gat acc	394
Lys Glu Leu Gly Glu Ile Pro Phe Tyr Gly His Ala Leu Thr Asp Thr	
100 105 110	
gga atg att tta att gac aga gag gat aaa aag ggg att gtg agc ctt	442
Gly Met Ile Leu Ile Asp Arg Glu Asp Lys Lys Gly Ile Val Ser Leu	
115 120 125	
ttg aaa gcg tgt aaa gaa aaa tta gac caa aac cgc cct tta gtg att	490
Leu Lys Ala Cys Lys Glu Lys Leu Asp Gln Asn Arg Pro Leu Val Ile	
130 135 140	
ttc cct gaa ggc act aga ggc aaa gga gga gaa aaa ttc ctc cct ttc	538
Phe Pro Glu Gly Thr Arg Gly Lys Gly Gly Glu Lys Phe Leu Pro Phe	
145 150 155 160	
aag caa ggg gct aaa atc atc gcc gaa aaa ttc cag ctc aaa atc caa	586
Lys Gln Gly Ala Lys Ile Ile Ala Glu Lys Phe Gln Leu Lys Ile Gln	
165 170 175	
ccc atg gtg tta atc aat tcc att aaa atc ttt aat tcc aag cct cta	634
Pro Met Val Leu Ile Asn Ser Ile Lys Ile Phe Asn Ser Lys Pro Leu	
180 185 190	
gaa gcc tat aaa gcg cgc acc cgt tta gtc atg cta gaa agc tat acg	682
Glu Ala Tyr Lys Ala Arg Thr Arg Leu Val Met Leu Glu Ser Tyr Thr	
195 200 205	
cct gat ttt aac tcg ccc acc tgg tat gaa gaa tta caa gaa cgc atg	730
Pro Asp Phe Asn Ser Pro Thr Trp Tyr Glu Glu Leu Gln Glu Arg Met	
210 215 220	
caa aaa gag tat tta aaa cac tat cat gaa tta aac cct agc gaa caa	778
Gln Lys Glu Tyr Leu Lys His Tyr His Glu Leu Asn Pro Ser Glu Gln	
225 230 235 240	
tgaagctttt tgactacgct cctttgagtt tggcttggcg ggagtttttg caaagcgaat	838
ttaaaaagcc ttatttttta gaaatagaaa aacgctacct agaagcccta aaaatcccta	898
aa	900

<210> 184

<211> 240

<212> PRT

<213> Helicobacter pylori

<400> 184

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Asn Arg Lys Asn Asn Asn Ala Arg Ser Ser Arg Arg Ala Cys Ser Cys	
35 40 45	
Phe Phe Ser Leu Thr Gly Val Asn Leu Glu Lys Ile Gly Thr Phe Asp	
50 55 60	
Thr Asp Ala Lys Leu Ile Val Leu Asn His Gln Ser Leu Leu Asp Ile	

65		70		75		80
Ile Tyr Leu Glu Ala Tyr His Pro Arg Asn Ile Cys Trp Ile Ala Lys						
	85		90		95	
Lys Glu Leu Gly Glu Ile Pro Phe Tyr Gly His Ala Leu Thr Asp Thr						
	100		105		110	
Gly Met Ile Leu Ile Asp Arg Glu Asp Lys Lys Gly Ile Val Ser Leu						
	115		120		125	
Leu Lys Ala Cys Lys Glu Lys Leu Asp Gln Asn Arg Pro Leu Val Ile						
	130		135		140	
Phe Pro Glu Gly Thr Arg Gly Lys Gly Gly Glu Lys Phe Leu Pro Phe						
145		150		155		160
Lys Gln Gly Ala Lys Ile Ile Ala Glu Lys Phe Gln Leu Lys Ile Gln						
	165		170		175	
Pro Met Val Leu Ile Asn Ser Ile Lys Ile Phe Asn Ser Lys Pro Leu						
	180		185		190	
Glu Ala Tyr Lys Ala Arg Thr Arg Leu Val Met Leu Glu Ser Tyr Thr						
	195		200		205	
Pro Asp Phe Asn Ser Pro Thr Trp Tyr Glu Glu Leu Gln Glu Arg Met						
	210		215		220	
Gln Lys Glu Tyr Leu Lys His Tyr His Glu Leu Asn Pro Ser Glu Gln						
225		230		235		240

<210> 185

<211> 990

<212> DNA

<213> Helicobacter pylori

<220>

<221> CDS

<222> (40)...(858)

<400> 185

ggccaaactc gctttaacta aaatgatgga gttatctta atg gag att aga acc	54
Met Glu Ile Arg Thr	
1 5	
ttt tta gaa cgc gct tta aaa gaa gat tta ggg cat ggg gat ttg ttt	102
Phe Leu Glu Arg Ala Leu Lys Glu Asp Leu Gly His Gly Asp Leu Phe	
10 15 20	
gaa agg gtg tta gaa aaa gat ttt aag gcc aca gcg ttt gtt agg gct	150
Glu Arg Val Leu Glu Lys Asp Phe Lys Ala Thr Ala Phe Val Arg Ala	
25 30 35	
aaa caa gag ggc gtg ttt tca ggc gaa aaa tac gct tta gag ttg ttg	198
Lys Gln Glu Gly Val Phe Ser Gly Glu Lys Tyr Ala Leu Glu Leu Leu	
40 45 50	
gaa atg acc ggc att gaa tgc gtt caa acg att aag gat aaa gaa cgc	246
Glu Met Thr Gly Ile Glu Cys Val Gln Thr Ile Lys Asp Lys Glu Arg	
55 60 65	
ttc aag cct aaa gac gct tta atg gaa att agg ggg gat ttt agc atg	294
Phe Lys Pro Lys Asp Ala Leu Met Glu Ile Arg Gly Asp Phe Ser Met	

70	75	80	85	
ctt tta aag gtt gag cgc acc ctt tta aac ctt ttg caa cac agc agc				342
Leu Leu Lys Val Glu Arg Thr Leu Leu Asn Leu Leu Gln His Ser Ser				
	90	95	100	
ggg att gct act tta acg agc cgt ttt gta gag gct tta aat tct cat				390
Gly Ile Ala Thr Leu Thr Ser Arg Phe Val Glu Ala Leu Asn Ser His				
	105	110	115	
aaa gtg cgt ttg ttg gac acg aga aaa acg aga ccc ctt tta agg atc				438
Lys Val Arg Leu Leu Asp Thr Arg Lys Thr Arg Pro Leu Leu Arg Ile				
	120	125	130	
ttt gaa aaa tat tcc gtg ctt aat ggg gga gcg agc aac cac cgc tta				486
Phe Glu Lys Tyr Ser Val Leu Asn Gly Gly Ala Ser Asn His Arg Leu				
	135	140	145	
ggg cta gat gac gct tta atg ctt aaa gac acg cat tta agg cat gtg				534
Gly Leu Asp Asp Ala Leu Met Leu Lys Asp Thr His Leu Arg His Val				
	150	155	160	165
aaa gat ctc aaa agc ttt tta acg cat gcc aga aaa aac ttg cct ttc				582
Lys Asp Leu Lys Ser Phe Leu Thr His Ala Arg Lys Asn Leu Pro Phe				
	170	175	180	
acg gct aaa att gaa att gaa tgc gaa agc ttt gaa gag gcc aaa aac				630
Thr Ala Lys Ile Glu Ile Glu Cys Glu Ser Phe Glu Glu Ala Lys Asn				
	185	190	195	
gcc atg aat gcg gga gcg gat att gtg atg tgc gat aat ttg agc gtt				678
Ala Met Asn Ala Gly Ala Asp Ile Val Met Cys Asp Asn Leu Ser Val				
	200	205	210	
tta gag act aaa gaa att gcc gct tat aga gat gcg cat tat ccc ttt				726
Leu Glu Thr Lys Glu Ile Ala Ala Tyr Arg Asp Ala His Tyr Pro Phe				
	215	220	225	
gtt tta ctg gaa gcg agc ggg aac att tca cta gag agc att aac gct				774
Val Leu Leu Glu Ala Ser Gly Asn Ile Ser Leu Glu Ser Ile Asn Ala				
	230	235	240	245
tac gct aaa agc ggc gtg gat gcc att agc gta ggg gct tta atc cat				822
Tyr Ala Lys Ser Gly Val Asp Ala Ile Ser Val Gly Ala Leu Ile His				
	250	255	260	
caa gcc act ttt att gac atg cac atg aaa atg gct taaagacttt				868
Gln Ala Thr Phe Ile Asp Met His Met Lys Met Ala				
	265	270		
aaaaaggggt tattaacatg ctaaaagaat atttagaaag cattaaagat cttacgcctg				928
aaaagaatga actcacgcac cgcccttctt tatacaactt gcttaatcag ttaaaaaacc				988
at				990

<210> 186

<211> 273
 <212> PRT
 <213> Helicobacter pylori

<400> 186
 Met Glu Ile Arg Thr Phe Leu Glu Arg Ala Leu Lys Glu Asp Leu Gly
 1 5 10 15
 His Gly Asp Leu Phe Glu Arg Val Leu Glu Lys Asp Phe Lys Ala Thr
 20 25 30
 Ala Phe Val Arg Ala Lys Gln Glu Gly Val Phe Ser Gly Glu Lys Tyr
 35 40 45
 Ala Leu Glu Leu Leu Glu Met Thr Gly Ile Glu Cys Val Gln Thr Ile
 50 55 60
 Lys Asp Lys Glu Arg Phe Lys Pro Lys Asp Ala Leu Met Glu Ile Arg
 65 70 75 80
 Gly Asp Phe Ser Met Leu Leu Lys Val Glu Arg Thr Leu Leu Asn Leu
 85 90 95
 Leu Gln His Ser Ser Gly Ile Ala Thr Leu Thr Ser Arg Phe Val Glu
 100 105 110
 Ala Leu Asn Ser His Lys Val Arg Leu Leu Asp Thr Arg Lys Thr Arg
 115 120 125
 Pro Leu Leu Arg Ile Phe Glu Lys Tyr Ser Val Leu Asn Gly Gly Ala
 130 135 140
 Ser Asn His Arg Leu Gly Leu Asp Asp Ala Leu Met Leu Lys Asp Thr
 145 150 155 160
 His Leu Arg His Val Lys Asp Leu Lys Ser Phe Leu Thr His Ala Arg
 165 170 175
 Lys Asn Leu Pro Phe Thr Ala Lys Ile Glu Ile Glu Cys Glu Ser Phe
 180 185 190
 Glu Glu Ala Lys Asn Ala Met Asn Ala Gly Ala Asp Ile Val Met Cys
 195 200 205
 Asp Asn Leu Ser Val Leu Glu Thr Lys Glu Ile Ala Ala Tyr Arg Asp
 210 215 220
 Ala His Tyr Pro Phe Val Leu Leu Glu Ala Ser Gly Asn Ile Ser Leu
 225 230 235 240
 Glu Ser Ile Asn Ala Tyr Ala Lys Ser Gly Val Asp Ala Ile Ser Val
 245 250 255
 Gly Ala Leu Ile His Gln Ala Thr Phe Ile Asp Met His Met Lys Met
 260 265 270
 Ala

<210> 187
 <211> 1153
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (51)...(1100)

<400> 187
 gatcaaacgc tacaacccta gctgtctttt agaagtggat gggggcgtga atg ata 56
 Met Ile

aaa ata tct ttg aac tcc aac aag cgg gcg tgg atg tgg tgg ttt cag	104
Lys Ile Ser Leu Asn Ser Asn Lys Arg Ala Trp Met Trp Trp Phe Gln	
5 10 15	
gga gtt ata ttt tta aat cca aag atc gta agc tgg cta ttg aag gct	152
Gly Val Ile Phe Leu Asn Pro Lys Ile Val Ser Trp Leu Leu Lys Ala	
20 25 30	
tac aga atg tca gac aat ctc ttg cat aaa gac atc caa gcc cta atc	200
Tyr Arg Met Ser Asp Asn Leu Leu His Lys Asp Ile Gln Ala Leu Ile	
35 40 45 50	
gct cgc tta aag cgc cag gac tta agc ttg ggc atg cta gaa aaa tcg	248
Ala Arg Leu Lys Arg Gln Asp Leu Ser Leu Gly Met Leu Glu Lys Ser	
55 60 65	
ctc tct cgc ctt att cat gat gaa atc aat ttg gag tat ttg aag gcg	296
Leu Ser Arg Leu Ile His Asp Glu Ile Asn Leu Glu Tyr Leu Lys Ala	
70 75 80	
tgc ggg ctc aat ttc ata gaa acg agc gaa aat tta atc acg ctc aaa	344
Cys Gly Leu Asn Phe Ile Glu Thr Ser Glu Asn Leu Ile Thr Leu Lys	
85 90 95	
aac ctt aaa acc ccc ctt aaa gat gag gtt ttt tcc ttt att gat tta	392
Asn Leu Lys Thr Pro Leu Lys Asp Glu Val Phe Ser Phe Ile Asp Leu	
100 105 110	
gaa acc acc gga tct tgc ccc ata aag cat gag att tta gaa att ggg	440
Glu Thr Thr Gly Ser Cys Pro Ile Lys His Glu Ile Leu Glu Ile Gly	
115 120 125 130	
gcc gtg caa gtg aaa ggg ggg gaa att atc aat cgt ttt gaa acc ctt	488
Ala Val Gln Val Lys Gly Gly Glu Ile Ile Asn Arg Phe Glu Thr Leu	
135 140 145	
gtg aaa gtc aaa agc gtg cct gat tat atc gct gag ctt aca ggc atc	536
Val Lys Val Lys Ser Val Pro Asp Tyr Ile Ala Glu Leu Thr Gly Ile	
150 155 160	
act tat gaa gac acc cta aac gcc cca agc gcg cat gaa gct ttg caa	584
Thr Tyr Glu Asp Thr Leu Asn Ala Pro Ser Ala His Glu Ala Leu Gln	
165 170 175	
gaa ttg cgg ctt ttt tta ggc aat agc gtg ttt gtg gcc cac aac gct	632
Glu Leu Arg Leu Phe Leu Gly Asn Ser Val Phe Val Ala His Asn Ala	
180 185 190	
aat ttt gat tac aac ttt ttg ggg cgt tat ttt gta gaa aaa ttg cat	680
Asn Phe Asp Tyr Asn Phe Leu Gly Arg Tyr Phe Val Glu Lys Leu His	
195 200 205 210	
tgc cct tta ttg aat tta aag ctt tgc act ctg gat tta tcc aaa cga	728

Cys Pro Leu Leu Asn Leu Lys Leu Cys Thr Leu Asp Leu Ser Lys Arg
 215 220 225
 gcc att ttg tcc atg cgt tat tct ttg agc ttt tta aaa gag ctt tta 776
 Ala Ile Leu Ser Met Arg Tyr Ser Leu Ser Phe Leu Lys Glu Leu Leu
 230 235 240
 ggg ttt ggt ata gaa gtc agc cat aga gcc tat gcg gac gct tta gcg 824
 Gly Phe Gly Ile Glu Val Ser His Arg Ala Tyr Ala Asp Ala Leu Ala
 245 250 255
 agc tat aaa ctc ttt gaa ata tgc ctg tta aac ttg ccc agc tac atc 872
 Ser Tyr Lys Leu Phe Glu Ile Cys Leu Leu Asn Leu Pro Ser Tyr Ile
 260 265 270
 aaa acg aca atg gat ttg att gat ttt tct aaa tgt gct aac acg cta 920
 Lys Thr Thr Met Asp Leu Ile Asp Phe Ser Lys Cys Ala Asn Thr Leu
 275 280 285 290
 atc aaa aga ccc cca aaa gcc aga tac caa gag att cca tcg cca ttt 968
 Ile Lys Arg Pro Pro Lys Ala Arg Tyr Gln Glu Ile Pro Ser Pro Phe
 295 300 305
 tct ctt ttt gaa aag aca aag ggc ttg ttc aat cat aaa agc aac cag 1016
 Ser Leu Phe Glu Lys Thr Lys Gly Leu Phe Asn His Lys Ser Asn Gln
 310 315 320
 tta aac gaa agc tgt tta atg ggg ttt atg ggg act gaa att tta gca 1064
 Leu Asn Glu Ser Cys Leu Met Gly Phe Met Gly Thr Glu Ile Leu Ala
 325 330 335
 tct cta ttt gat act ttt gaa tgt tgc cta gta ttt tgattttatc 1110
 Ser Leu Phe Asp Thr Phe Glu Cys Cys Leu Val Phe
 340 345 350
 ggttacttcg cactcatcgt atatcttttt gtattcttgt atg 1153
 <210> 188
 <211> 350
 <212> PRT
 <213> Helicobacter pylori

<400> 188
 Met Ile Lys Ile Ser Leu Asn Ser Asn Lys Arg Ala Trp Met Trp Trp
 1 5 10 15
 Phe Gln Gly Val Ile Phe Leu Asn Pro Lys Ile Val Ser Trp Leu Leu
 20 25 30
 Lys Ala Tyr Arg Met Ser Asp Asn Leu Leu His Lys Asp Ile Gln Ala
 35 40 45
 Leu Ile Ala Arg Leu Lys Arg Gln Asp Leu Ser Leu Gly Met Leu Glu
 50 55 60
 Lys Ser Leu Ser Arg Leu Ile His Asp Glu Ile Asn Leu Glu Tyr Leu
 65 70 75 80
 Lys Ala Cys Gly Leu Asn Phe Ile Glu Thr Ser Glu Asn Leu Ile Thr
 85 90 95

Leu Lys Asn Leu Lys Thr Pro Leu Lys Asp Glu Val Phe Ser Phe Ile
 100 105 110
 Asp Leu Glu Thr Thr Gly Ser Cys Pro Ile Lys His Glu Ile Leu Glu
 115 120 125
 Ile Gly Ala Val Gln Val Lys Gly Gly Glu Ile Ile Asn Arg Phe Glu
 130 135 140
 Thr Leu Val Lys Val Lys Ser Val Pro Asp Tyr Ile Ala Glu Leu Thr
 145 150 155 160
 Gly Ile Thr Tyr Glu Asp Thr Leu Asn Ala Pro Ser Ala His Glu Ala
 165 170 175
 Leu Gln Glu Leu Arg Leu Phe Leu Gly Asn Ser Val Phe Val Ala His
 180 185 190
 Asn Ala Asn Phe Asp Tyr Asn Phe Leu Gly Arg Tyr Phe Val Glu Lys
 195 200 205
 Leu His Cys Pro Leu Leu Asn Leu Lys Leu Cys Thr Leu Asp Leu Ser
 210 215 220
 Lys Arg Ala Ile Leu Ser Met Arg Tyr Ser Leu Ser Phe Leu Lys Glu
 225 230 235 240
 Leu Leu Gly Phe Gly Ile Glu Val Ser His Arg Ala Tyr Ala Asp Ala
 245 250 255
 Leu Ala Ser Tyr Lys Leu Phe Glu Ile Cys Leu Leu Asn Leu Pro Ser
 260 265 270
 Tyr Ile Lys Thr Thr Met Asp Leu Ile Asp Phe Ser Lys Cys Ala Asn
 275 280 285
 Thr Leu Ile Lys Arg Pro Pro Lys Ala Arg Tyr Gln Glu Ile Pro Ser
 290 295 300
 Pro Phe Ser Leu Phe Glu Lys Thr Lys Gly Leu Phe Asn His Lys Ser
 305 310 315 320
 Asn Gln Leu Asn Glu Ser Cys Leu Met Gly Phe Met Gly Thr Glu Ile
 325 330 335
 Leu Ala Ser Leu Phe Asp Thr Phe Glu Cys Cys Leu Val Phe
 340 345 350

<210> 189
 <211> 990
 <212> DNA
 <213> *Helicobacter pylori*

<220>
 <221> CDS
 <222> (52)...(864)

<400> 189
 aaaaacactt tttaatgtta taatctatcc taaacaatat aaggggtttt t atg gca 57
 Met Ala
 1

 aaa att gaa agc aat gat tcc cac cta aga ggt att tta aaa gac gaa 105
 Lys Ile Glu Ser Asn Asp Ser His Leu Arg Gly Ile Leu Lys Asp Glu
 5 10 15

 ctc tac tat caa atc ccc atc tac caa cgc cct tat caa tgg aca gaa 153
 Leu Tyr Tyr Gln Ile Pro Ile Tyr Gln Arg Pro Tyr Gln Trp Thr Glu
 20 25 30

gaa aac tgc gaa aaa ctt tta gac gat ttg ttt ttt aat tat gaa gat	201
Glu Asn Cys Glu Lys Leu Leu Asp Asp Leu Phe Phe Asn Tyr Glu Asp	
35 40 45 50	
gac aga gaa ggc gat tat ttt tgc ggc tca tta gtc tta att gca atc	249
Asp Arg Glu Gly Asp Tyr Phe Cys Gly Ser Leu Val Leu Ile Ala Ile	
55 60 65	
agc aaa gat tct aaa gcc aca acc tat gat gtt gta gat ggc cag caa	297
Ser Lys Asp Ser Lys Ala Thr Thr Tyr Asp Val Val Asp Gly Gln Gln	
70 75 80	
cgc tta agc act ttc att ctg ctt gca aaa gtt tta gcc gat ctt tat	345
Arg Leu Ser Thr Phe Ile Leu Leu Ala Lys Val Leu Ala Asp Leu Tyr	
85 90 95	
aat gat tgt tta gac cct aag aat tta gaa cat tta caa gag ggt tgg	393
Asn Asp Cys Leu Asp Pro Lys Asn Leu Glu His Leu Gln Glu Gly Trp	
100 105 110	
aaa gat agg cat aca gaa aga aaa cga ctg agt ttt aac act ata ggg	441
Lys Asp Arg His Thr Glu Arg Lys Arg Leu Ser Phe Asn Thr Ile Gly	
115 120 125 130	
tct aac gct gaa tat gat ttt caa gat gca tta gaa cat ttc aac gac	489
Ser Asn Ala Glu Tyr Asp Phe Gln Asp Ala Leu Glu His Phe Asn Asp	
135 140 145	
tct caa gca agc aag aat aaa aat aat aag aac aat tac cta aaa aat	537
Ser Gln Ala Ser Lys Asn Lys Asn Asn Lys Asn Asn Tyr Leu Lys Asn	
150 155 160	
gcg atc tgt tta aaa gac tat ctc atg aaa aaa gag att aaa aac att	585
Ala Ile Cys Leu Lys Asp Tyr Leu Met Lys Lys Glu Ile Lys Asn Ile	
165 170 175	
aac gat ttc att gag tgg ctg tat tct aat gtt aaa ttt atc acc atc	633
Asn Asp Phe Ile Glu Trp Leu Tyr Ser Asn Val Lys Phe Ile Thr Ile	
180 185 190	
att tgc cca aac ata gac aag gca tta agg att ttt aat gtt tta aac	681
Ile Cys Pro Asn Ile Asp Lys Ala Leu Arg Ile Phe Asn Val Leu Asn	
195 200 205 210	
gct agg ggt ttg cct ttg aat gcg aca gat att ttt aag ggg gaa tta	729
Ala Arg Gly Leu Pro Leu Asn Ala Thr Asp Ile Phe Lys Gly Glu Leu	
215 220 225	
tta aaa cac gct aaa gag cat gag cga gaa gaa ttt gtg tct cgt tgg	777
Leu Lys His Ala Lys Glu His Glu Arg Glu Glu Phe Val Ser Arg Trp	
230 235 240	
aac gcc tta agc caa aaa tgc tcg gac aat gat tta aca atg gag aca	825
Asn Ala Leu Ser Gln Lys Cys Ser Asp Asn Asp Leu Thr Met Glu Thr	

245	250	255	
tta ttc agt tgg tat aac cta tct caa tcc ggt aac ttc tagagacaaa			874
Leu Phe Ser Trp Tyr Asn Leu Ser Gln Ser Gly Asn Phe			
260	265	270	

atggaaaaag agctcgttac ttgggttcaac atacttaaca aacccccccct agaatacctt	934
aagggcgtag aggattttta caacgcttat ggtgaggtgt tagaaatgca agatcg	990

<210> 190
 <211> 271
 <212> PRT
 <213> Helicobacter pylori

<400> 190

Met	Ala	Lys	Ile	Glu	Ser	Asn	Asp	Ser	His	Leu	Arg	Gly	Ile	Leu	Lys
1				5					10					15	
Asp	Glu	Leu	Tyr	Tyr	Gln	Ile	Pro	Ile	Tyr	Gln	Arg	Pro	Tyr	Gln	Trp
			20					25					30		
Thr	Glu	Glu	Asn	Cys	Glu	Lys	Leu	Leu	Asp	Asp	Leu	Phe	Phe	Asn	Tyr
			35				40						45		
Glu	Asp	Asp	Arg	Glu	Gly	Asp	Tyr	Phe	Cys	Gly	Ser	Leu	Val	Leu	Ile
			50			55					60				
Ala	Ile	Ser	Lys	Asp	Ser	Lys	Ala	Thr	Thr	Tyr	Asp	Val	Val	Asp	Gly
65					70					75				80	
Gln	Gln	Arg	Leu	Ser	Thr	Phe	Ile	Leu	Leu	Ala	Lys	Val	Leu	Ala	Asp
			85					90						95	
Leu	Tyr	Asn	Asp	Cys	Leu	Asp	Pro	Lys	Asn	Leu	Glu	His	Leu	Gln	Glu
			100					105					110		
Gly	Trp	Lys	Asp	Arg	His	Thr	Glu	Arg	Lys	Arg	Leu	Ser	Phe	Asn	Thr
			115				120						125		
Ile	Gly	Ser	Asn	Ala	Glu	Tyr	Asp	Phe	Gln	Asp	Ala	Leu	Glu	His	Phe
			130			135					140				
Asn	Asp	Ser	Gln	Ala	Ser	Lys	Asn	Lys	Asn	Asn	Lys	Asn	Asn	Tyr	Leu
145					150					155					160
Lys	Asn	Ala	Ile	Cys	Leu	Lys	Asp	Tyr	Leu	Met	Lys	Lys	Glu	Ile	Lys
			165						170					175	
Asn	Ile	Asn	Asp	Phe	Ile	Glu	Trp	Leu	Tyr	Ser	Asn	Val	Lys	Phe	Ile
			180					185					190		
Thr	Ile	Ile	Cys	Pro	Asn	Ile	Asp	Lys	Ala	Leu	Arg	Ile	Phe	Asn	Val
			195				200						205		
Leu	Asn	Ala	Arg	Gly	Leu	Pro	Leu	Asn	Ala	Thr	Asp	Ile	Phe	Lys	Gly
			210			215					220				
Glu	Leu	Leu	Lys	His	Ala	Lys	Glu	His	Glu	Arg	Glu	Glu	Phe	Val	Ser
225					230					235					240
Arg	Trp	Asn	Ala	Leu	Ser	Gln	Lys	Cys	Ser	Asp	Asn	Asp	Leu	Thr	Met
			245						250					255	
Glu	Thr	Leu	Phe	Ser	Trp	Tyr	Asn	Leu	Ser	Gln	Ser	Gly	Asn	Phe	
			260					265						270	

<210> 191
 <211> 283
 <212> DNA
 <213> Helicobacter pylori

<220>

<221> CDS

<222> (51)...(230)

<400> 191

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ccctagaatg cgtgcttttg gctaaggaat ttttgcctaa cgctaggctt atg gtg      56
                                     Met Val
                                     1

gct ggg ggg cgt gaa gtg gtg ttt aaa gat aat gac aaa aag gaa gcc      104
Ala Gly Gly Arg Glu Val Val Phe Lys Asp Asn Asp Lys Lys Glu Ala
      5              10              15

aag ctt ttt gaa tac ggc atc aat gcg gtg gtg cta ggg gac tat ttg      152
Lys Leu Phe Glu Tyr Gly Ile Asn Ala Val Val Leu Gly Asp Tyr Leu
      20              25              30

acc acc aaa ggc aaa gcc cct aaa aaa gat ata gaa aaa ctg ctc tct      200
Thr Thr Lys Gly Lys Ala Pro Lys Lys Asp Ile Glu Lys Leu Leu Ser
      35              40              45              50

tat ggc ttg aca atg gcg aca agc tgt cat taatgagaga acttttttaa      250
Tyr Gly Leu Thr Met Ala Thr Ser Cys His
              55              60

agcgttagag gggttttttcg cctttcttaga atg      283
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<210> 192

<211> 60

<212> PRT

<213> Helicobacter pylori

<400> 192

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Met Val Ala Gly Gly Arg Glu Val Val Phe Lys Asp Asn Asp Lys Lys
  1              5              10              15
Glu Ala Lys Leu Phe Glu Tyr Gly Ile Asn Ala Val Val Leu Gly Asp
      20              25              30
Tyr Leu Thr Thr Lys Gly Lys Ala Pro Lys Lys Asp Ile Glu Lys Leu
      35              40              45
Leu Ser Tyr Gly Leu Thr Met Ala Thr Ser Cys His
      50              55              60
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<210> 193

<211> 478

<212> DNA

<213> Helicobacter pylori

<220>

<221> CDS

<222> (51)...(425)

<400> 193

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cacttgtttg gagtgcctat aggcataata agtcctgttt ctatttttaa tgg tgg      56
                                     Trp Trp
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tat gat aac aat gtc aac tta cag ctt ttt tat gga ttt tta cac aat 104
 Tyr Asp Asn Asn Val Asn Leu Gln Leu Phe Tyr Gly Phe Leu His Asn
 5 10 15

gtg tat gaa aat gag aag ttt ttc atc ggt tat ttt ata ggg gct ggg 152
 Val Tyr Glu Asn Glu Lys Phe Phe Ile Gly Tyr Phe Ile Gly Ala Gly
 20 25 30

cta ggg ggt gag agc gta aca ccc aat gtt ctt aaa gat ttt ggt aat 200
 Leu Gly Gly Glu Ser Val Thr Pro Asn Val Leu Lys Asp Phe Gly Asn
 35 40 45 50

atg tta gcg caa tta gtg caa ttt cag ggc tat ggc tca cta ggg cta 248
 Met Leu Ala Gln Leu Val Gln Phe Gln Gly Tyr Gly Ser Leu Gly Leu
 55 60 65

agg atg ggc gat aaa cac cac acg cta gaa ttg agc acg agc gtt cat 296
 Arg Met Gly Asp Lys His His Thr Leu Glu Leu Ser Thr Ser Val His
 70 75 80

ggc gac gct cct agt tgt tct tta aaa aag cta aag agt tgc gaa agt 344
 Gly Asp Ala Pro Ser Cys Ser Leu Lys Lys Leu Lys Ser Cys Glu Ser
 85 90 95

gcg agg gtt tta caa gca aaa atc cct agg ggc att ttt gaa agc tat 392
 Ala Arg Val Leu Gln Ala Lys Ile Pro Arg Gly Ile Phe Glu Ser Tyr
 100 105 110

gtt act tgg agc gcg gat tat gtt tat cgt ttt taaaagt ttt taaaaattta 445
 Val Thr Trp Ser Ala Asp Tyr Val Tyr Arg Phe
 115 120 125

atggctttgt tccaattgaa taggggtaat aaa 478

<210> 194

<211> 125

<212> PRT

<213> Helicobacter pylori

<400> 194

Trp Trp Tyr Asp Asn Asn Val Asn Leu Gln Leu Phe Tyr Gly Phe Leu
 1 5 10 15
 His Asn Val Tyr Glu Asn Glu Lys Phe Phe Ile Gly Tyr Phe Ile Gly
 20 25 30
 Ala Gly Leu Gly Gly Glu Ser Val Thr Pro Asn Val Leu Lys Asp Phe
 35 40 45
 Gly Asn Met Leu Ala Gln Leu Val Gln Phe Gln Gly Tyr Gly Ser Leu
 50 55 60
 Gly Leu Arg Met Gly Asp Lys His His Thr Leu Glu Leu Ser Thr Ser
 65 70 75 80
 Val His Gly Asp Ala Pro Ser Cys Ser Leu Lys Lys Leu Lys Ser Cys
 85 90 95
 Glu Ser Ala Arg Val Leu Gln Ala Lys Ile Pro Arg Gly Ile Phe Glu

	100		105		110
Ser	Tyr Val Thr Trp Ser Ala Asp Tyr Val Tyr Arg Phe				
	115		120		125

<210> 195
 <211> 2169
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (53)...(2119)

<400> 195
 cttttaaaag gctaatagcct ttttaaaaaa ttgaaataaa ggaataaaaag tt atg acg 58
 Met Thr
 1

gat aac aac caa aac aat gaa aac cat gaa aac agc agt gaa aat tca	106
Asp Asn Asn Gln Asn Asn Glu Asn His Glu Asn Ser Ser Glu Asn Ser	
5 10 15	

aaa gct gat gag atg cga gcc gga gcg ttt gag cgc ttc acc aac cgc	154
Lys Ala Asp Glu Met Arg Ala Gly Ala Phe Glu Arg Phe Thr Asn Arg	
20 25 30	

aaa aag cgt ttc aga gaa aac gcg caa aaa aac gca gag tat tca aac	202
Lys Lys Arg Phe Arg Glu Asn Ala Gln Lys Asn Ala Glu Tyr Ser Asn	
35 40 45 50	

cat gaa gcg tct tgc cac cat aaa aaa gag cat cgc cct aac aaa aaa	250
His Glu Ala Ser Ser His His Lys Lys Glu His Arg Pro Asn Lys Lys	
55 60 65	

cca aac aac cac cac aaa caa aaa cat gcc aaa aca cga aat tac gcc	298
Pro Asn Asn His His Lys Gln Lys His Ala Lys Thr Arg Asn Tyr Ala	
70 75 80	

caa gaa gaa ttg gat agc aac aaa gta gag ggc gtt acg gaa att ttg	346
Gln Glu Glu Leu Asp Ser Asn Lys Val Glu Gly Val Thr Glu Ile Leu	
85 90 95	

cat gtg aat gag aga ggg act tta ggc ttt cat aag gag tta aaa aag	394
His Val Asn Glu Arg Gly Thr Leu Gly Phe His Lys Glu Leu Lys Lys	
100 105 110	

ggc gtt gaa gcg aat aac aag atc caa gtg gag cat tta aac ccg cat	442
Gly Val Glu Ala Asn Asn Lys Ile Gln Val Glu His Leu Asn Pro His	
115 120 125 130	

tat aag atg aac tta aac tct aaa gcg agc gtt aaa atc acg cct tta	490
Tyr Lys Met Asn Leu Asn Ser Lys Ala Ser Val Lys Ile Thr Pro Leu	
135 140 145	

ggg ggc ttg ggt gag att ggg ggg aac atg atg gtc att gaa acc cca	538
Gly Gly Leu Gly Glu Ile Gly Gly Asn Met Met Val Ile Glu Thr Pro	
150 155 160	
aaa agc gcg atc gtg att gat gcg ggc atg agc ttc cct aaa gag ggg	586
Lys Ser Ala Ile Val Ile Asp Ala Gly Met Ser Phe Pro Lys Glu Gly	
165 170 175	
ctc ttt ggc gtg gat att tta atc ccg gat ttt tcc tac ttg cac caa	634
Leu Phe Gly Val Asp Ile Leu Ile Pro Asp Phe Ser Tyr Leu His Gln	
180 185 190	
atc aag gac aaa atc gct ggc att atc atc acc cat gcc cat gaa gat	682
Ile Lys Asp Lys Ile Ala Gly Ile Ile Ile Thr His Ala His Glu Asp	
195 200 205 210	
cac ata ggg gcc acg cct tat ttg ttt aaa gag ctg caa ttc ccc ctt	730
His Ile Gly Ala Thr Pro Tyr Leu Phe Lys Glu Leu Gln Phe Pro Leu	
215 220 225	
tat ggc acg ccc ttg agt ttg ggg ctg att ggg agc aag ttt gat gaa	778
Tyr Gly Thr Pro Leu Ser Leu Gly Leu Ile Gly Ser Lys Phe Asp Glu	
230 235 240	
cat ggt ttg aaa aaa tac cgc tcg tat ttt aaa atc gta gaa aag cgc	826
His Gly Leu Lys Lys Tyr Arg Ser Tyr Phe Lys Ile Val Glu Lys Arg	
245 250 255	
tgt ccc att agc gtg ggc gaa ttt atc att gaa tgg atc cac atc acg	874
Cys Pro Ile Ser Val Gly Glu Phe Ile Ile Glu Trp Ile His Ile Thr	
260 265 270	
cat tct atc att gac agc agc gct tta gcg atc caa act aaa gcc gga	922
His Ser Ile Ile Asp Ser Ser Ala Leu Ala Ile Gln Thr Lys Ala Gly	
275 280 285 290	
acg atc atc cac acc ggc gat ttt aaa atc gat cac acc ccg gtg gat	970
Thr Ile Ile His Thr Gly Asp Phe Lys Ile Asp His Thr Pro Val Asp	
295 300 305	
aat ttg ccc acg gat ttg tat cgt tta gcg cac tat ggc gaa aag ggg	1018
Asn Leu Pro Thr Asp Leu Tyr Arg Leu Ala His Tyr Gly Glu Lys Gly	
310 315 320	
gtg atg ctt ctt tta agc gat tcc acc aac tcc cat aaa tcc ggg act	1066
Val Met Leu Leu Leu Ser Asp Ser Thr Asn Ser His Lys Ser Gly Thr	
325 330 335	
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Thr Pro Ser Glu Ser Thr Ile Ala Pro Ala Phe Asp Thr Leu Phe Lys	
340 345 350	
gaa gcg caa ggg agg gtg att atg agc acc ttc tct agc aat atc cac	1162
Glu Ala Gln Gly Arg Val Ile Met Ser Thr Phe Ser Ser Asn Ile His	
355 360 365 370	

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gtc gct agc gcc ggg gtg ttt gtg gct acg att ttt gtg aat aaa aac			1882
Val Ala Ser Ala Gly Val Phe Val Ala Thr Ile Phe Val Asn Lys Asn			
595	600	605	610
aag caa gcg ctt tta gaa agc tct caa ttt tcc agt tta ggg ctt gtg			1930
Lys Gln Ala Leu Leu Glu Ser Ser Gln Phe Ser Ser Leu Gly Leu Val			
	615	620	625
ggt ttc aaa gat gaa aag cct ttg atc aaa gaa att caa ggg ggc tta			1978
Gly Phe Lys Asp Glu Lys Pro Leu Ile Lys Glu Ile Gln Gly Gly Leu			
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gag gtg tta ttg aaa tcc agc aac gcc gaa att ttg aat aac cct aaa			2026
Glu Val Leu Leu Lys Ser Ser Asn Ala Glu Ile Leu Asn Asn Pro Lys			
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aaa tta gaa gat cac act cgt aat ttc atc aga aaa gcg ctc ttt aaa			2074
Lys Leu Glu Asp His Thr Arg Asn Phe Ile Arg Lys Ala Leu Phe Lys			
	660	665	670
aag ttt aga aaa tac ccg gct atc att tgt cat gcc cat tct ttt			2119
Lys Phe Arg Lys Tyr Pro Ala Ile Ile Cys His Ala His Ser Phe			
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Ser Asn His Glu Ala Ser Ser His His Lys Lys Glu His Arg Pro Asn			
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Lys Lys Pro Asn Asn His His Lys Gln Lys His Ala Lys Thr Arg Asn			
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Tyr Ala Gln Glu Glu Leu Asp Ser Asn Lys Val Glu Gly Val Thr Glu			
85 90 95			
Ile Leu His Val Asn Glu Arg Gly Thr Leu Gly Phe His Lys Glu Leu			
100 105 110			
Lys Lys Gly Val Glu Ala Asn Asn Lys Ile Gln Val Glu His Leu Asn			
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Pro His Tyr Lys Met Asn Leu Asn Ser Lys Ala Ser Val Lys Ile Thr			
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Pro Leu Gly Gly Leu Gly Glu Ile Gly Gly Asn Met Met Val Ile Glu			
145 150 155 160			
Thr Pro Lys Ser Ala Ile Val Ile Asp Ala Gly Met Ser Phe Pro Lys			

Lys Asn Lys Gln Ala Leu Leu Glu Ser Ser Gln Phe Ser Ser Leu Gly
 610 615 620
 Leu Val Gly Phe Lys Asp Glu Lys Pro Leu Ile Lys Glu Ile Gln Gly
 625 630 635 640
 Gly Leu Glu Val Leu Leu Lys Ser Ser Asn Ala Glu Ile Leu Asn Asn
 645 650 655
 Pro Lys Lys Leu Glu Asp His Thr Arg Asn Phe Ile Arg Lys Ala Leu
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 Phe Ser Asn Leu Asn Glu Glu Pro Leu Lys Asn Gln Ile Lys Ala Glu
 5 10 15 20

ttt ttt aag gat aag aaa ttc ctt tat agc ggg gat aaa ata gat ttc 153
 Phe Phe Lys Asp Lys Lys Phe Leu Tyr Ser Gly Asp Lys Ile Asp Phe
 25 30 35

atg cta agc tat aag cat tct aac gcc acc tta ccc att tta tgg ggc 201
 Met Leu Ser Tyr Lys His Ser Asn Ala Thr Leu Pro Ile Leu Trp Gly
 40 45 50

gaa gct aaa agg ggc gat ttt gat gat ttg gac aaa gct ttc acg caa 249
 Glu Ala Lys Arg Gly Asp Phe Asp Asp Leu Asp Lys Ala Phe Thr Gln
 55 60 65

ctt ctt tta acc ata ggc aag cac agg ctt tat acc cac cac aca cca 297
 Leu Leu Leu Thr Ile Gly Lys His Arg Leu Tyr Thr His His Thr Pro
 70 75 80

cct tat ttg tgc gct ttt aac gct ttt aaa atg gaa ttt atc gcc ttt 345
 Pro Tyr Leu Cys Ala Phe Asn Ala Phe Lys Met Glu Phe Ile Ala Phe
 85 90 95 100

gat gac acg atc aca agc ttt ttt tat aaa agc gat ata gat ttt tct 393
 Asp Asp Thr Ile Thr Ser Phe Phe Tyr Lys Ser Asp Ile Asp Phe Ser
 105 110 115

atc acc cca agc aac cac aac aca gaa ggt ttt aaa cat gct tta gac	441
Ile Thr Pro Ser Asn His Asn Thr Glu Gly Phe Lys His Ala Leu Asp	
120 125 130	
gcg ttt aaa gcc atg agc aaa tcc cat aaa ttc gtt ttt gac ttt aaa	489
Ala Phe Lys Ala Met Ser Lys Ser His Lys Phe Val Phe Asp Phe Lys	
135 140 145	
acc caa agc caa gaa tgc aaa gaa ttt atc aaa aac cgt tta aat tct	537
Thr Gln Ser Gln Glu Cys Lys Glu Phe Ile Lys Asn Arg Leu Asn Ser	
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agc cat tta ctc agc aaa atc caa att gac aaa aac aat ttc ttt acg	585
Ser His Leu Leu Ser Lys Ile Gln Ile Asp Lys Asn Asn Phe Phe Thr	
165 170 175 180	
atc tat caa aag tgg ctt gaa att gtc aaa ccc acc att gac ata aat	633
Ile Tyr Gln Lys Trp Leu Glu Ile Val Lys Pro Thr Ile Asp Ile Asn	
185 190 195	
tgg gag gtg gct aaa act aaa gac att tta gac gca gac tat tat tta	681
Trp Glu Val Ala Lys Thr Lys Asp Ile Leu Asp Ala Asp Tyr Tyr Leu	
200 205 210	
gcg gat ttg ctt agc gat ggc gat aaa acc att att gag aaa ttg cac	729
Ala Asp Leu Leu Ser Asp Gly Asp Lys Thr Ile Ile Glu Lys Leu His	
215 220 225	
acg att tta aga tgc agc cat tat aaa ttg aat agg ggt gtg aat gaa	777
Thr Ile Leu Arg Ser Ser His Tyr Lys Leu Asn Arg Gly Val Asn Glu	
230 235 240	
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Leu Gly Lys Met Asp Phe Met Glu Val Gly Phe Thr Asp Ser Gln Gln	
245 250 255 260	
gcc cat caa gaa ttt tgg agc gtt tat gaa cga ccg cct aaa aga gaa	873
Ala His Gln Glu Phe Trp Ser Val Tyr Glu Arg Pro Pro Lys Arg Glu	
265 270 275	
ttt caa gcc tct att tta gag cgg cgc gac ttg tta gta cca agc gat	921
Phe Gln Ala Ser Ile Leu Glu Arg Arg Asp Leu Leu Val Pro Ser Asp	
280 285 290	
gtg aga gaa agg aaa ggg gcg ttt ttc acc cct aaa atc tgg gta gaa	969
Val Arg Glu Arg Lys Gly Ala Phe Phe Thr Pro Lys Ile Trp Val Glu	
295 300 305	
aag agt caa gaa tat tta gct aaa gct ttg ggg caa gat tat caa gag	1017
Lys Ser Gln Glu Tyr Leu Ala Lys Ala Leu Gly Gln Asp Tyr Gln Glu	
310 315 320	
gat tgt atc att tgg gat tgc gct ggg ggg act ggg aat ttg ctt cga	1065
Asp Cys Ile Ile Trp Asp Cys Ala Gly Gly Thr Gly Asn Leu Leu Arg	

325		330		335		340	
ggt tta ttg aat aag gct aat ttg tat cta tcc act tta gat cat aac	1113						
Gly Leu Leu Asn Lys Ala Asn Leu Tyr Leu Ser Thr Leu Asp His Asn							
345		350		355			
gat gtg gca atc gtt aaa gat ctg gct gca aaa aac cac tta aaa tta	1161						
Asp Val Ala Ile Val Lys Asp Leu Ala Ala Lys Asn His Leu Lys Leu							
360		365		370			
ctg gaa aat cat gtt ttc caa ttt gac ttt tta aac gat gat ttt ttc	1209						
Leu Glu Asn His Val Phe Gln Phe Asp Phe Leu Asn Asp Asp Phe Phe							
375		380		385			
agc gat aaa acg cca aaa agc ttg caa gaa atc tta aaa gac aaa gag	1257						
Ser Asp Lys Thr Pro Lys Ser Leu Gln Glu Ile Leu Lys Asp Lys Glu							
390		395		400			
aaa cga aaa aag ctc atc att tac atc aac ccg ccc tat gca gaa gca	1305						
Lys Arg Lys Lys Leu Ile Ile Tyr Ile Asn Pro Pro Tyr Ala Glu Ala							
405		410		415		420	
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Gly Asn Lys Ser Lys Met Ser Gly Thr Gly Glu His Lys Ala Lys Val							
425		430		435			
gca cga gac aat ctc atc tgt gaa aaa tac aaa aat gaa tta ggc aag	1401						
Ala Arg Asp Asn Leu Ile Cys Glu Lys Tyr Lys Asn Glu Leu Gly Lys							
440		445		450			
gct aat aat gaa gtt ttt gca caa ttt ttc atg cgt att tac aaa gaa	1449						
Ala Asn Asn Glu Val Phe Ala Gln Phe Phe Met Arg Ile Tyr Lys Glu							
455		460		465			
tta aac ggt gtt atc ctt gca agt ttt tca act ttg aaa aac ttg caa	1497						
Leu Asn Gly Val Ile Leu Ala Ser Phe Ser Thr Leu Lys Asn Leu Gln							
470		475		480			
gga tct aat ttt aaa aaa ttc aga gaa atc ttt aaa gct aaa ttt tta	1545						
Gly Ser Asn Phe Lys Lys Phe Arg Glu Ile Phe Lys Ala Lys Phe Leu							
485		490		495		500	
gag ggg ttt atg gtg cca gca gac act ttt gat aat gtt agg ggg caa	1593						
Glu Gly Phe Met Val Pro Ala Asp Thr Phe Asp Asn Val Arg Gly Gln							
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ttt cct atc ggc ttt tta gtg tgg gat aca agc tct att ctt cct aaa	1641						
Phe Pro Ile Gly Phe Leu Val Trp Asp Thr Ser Ser Ile Leu Pro Lys							
520		525		530			
gaa aac ccc cta aat tta ggg ggc aac tct aaa gaa gag aaa caa aac	1689						
Glu Asn Pro Leu Asn Leu Gly Gly Asn Ser Lys Glu Glu Lys Gln Asn							
535		540		545			
tcc aat tta atc tta gac caa gac aat ttg aaa gat aat ccc ttg aaa	1737						

Ser	Asn	Leu	Ile	Leu	Asp	Gln	Asp	Asn	Leu	Lys	Asp	Asn	Pro	Leu	Lys		
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gag	cgt	ttt	tgc	ctt	tta	gac	ata	aac	gct	cct	aat	agg	aag	atg	tgt	1785	
Glu	Arg	Phe	Cys	Leu	Leu	Asp	Ile	Asn	Ala	Pro	Asn	Arg	Lys	Met	Cys		
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Ser	Gln	Ser	Arg	Thr	Arg	Thr	Lys	Gly	Thr	Gln	Lys	His	Ser	Thr	Ala		
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gcc	ccc	ttt	gaa	acc	cct	tta	cac	act	ggt	agt	tta	gaa	ata	ttt	gat	1881	
Ala	Pro	Phe	Glu	Thr	Pro	Leu	His	Thr	Val	Ser	Leu	Glu	Ile	Phe	Asp		
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agt	ttc	ggc	gga	ttt	tta	ggc	agt	aaa	aaa	ata	tac	act	cac	aca	ata	1929	
Ser	Phe	Gly	Gly	Phe	Leu	Gly	Ser	Lys	Lys	Ile	Tyr	Thr	His	Thr	Ile		
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gac	aaa	atg	ctt	act	tta	gcg	gat	tat	tta	caa	aag	ttt	cag	cca	aca	1977	
Asp	Lys	Met	Leu	Thr	Leu	Ala	Asp	Tyr	Leu	Gln	Lys	Phe	Gln	Pro	Thr		
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aaa	aga	gac	act	att	ttt	ggc	tat	tta	gat	cct	ggt	cgc	aat	agt	ttt	2025	
Lys	Arg	Asp	Thr	Ile	Phe	Gly	Tyr	Leu	Asp	Pro	Gly	Arg	Asn	Ser	Phe		
645					650					655					660		
caa	cat	caa	aat	cta	att	cat	att	agc	att	att	gac	aaa	tca	aaa	caa	2073	
Gln	His	Gln	Asn	Leu	Ile	His	Ile	Ser	Ile	Ile	Asp	Lys	Ser	Lys	Gln		
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tcg	cat	gta	aaa	tat	ttt	cca	atc	att	gca	act	aca	att	ttg	ttg	gta	2121	
Ser	His	Val	Lys	Tyr	Phe	Pro	Ile	Ile	Ala	Thr	Thr	Ile	Leu	Leu	Val		
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tct	gta	ttt	ttc	tcc	atc	cgc	cat	tgc	atc	aaa	gcc	aca	tgg	caa	aac	2169	
Ser	Val	Phe	Phe	Ser	Ile	Arg	His	Cys	Ile	Lys	Ala	Thr	Trp	Gln	Asn		
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gat	agg	gat	caa	ttt	tac	gcc	ccc	tat	gac	gat	gcg	ttc	caa	gac	gac	2217	
Asp	Arg	Asp	Gln	Phe	Tyr	Ala	Pro	Tyr	Asp	Asp	Ala	Phe	Gln	Asp	Asp		
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agc	gag	ttt	aaa	aac	aat	tgt	ttg	att	ttc	atg	ctt	ttt	cac	acc	cag	2265	
Ser	Glu	Phe	Lys	Asn	Asn	Cys	Leu	Ile	Phe	Met	Leu	Phe	His	Thr	Gln		
725					730					735					740		
aac	cgc	atc	act	acc	gct	caa	ggg	act	aac	cat	ttt	atc	ccc	ttt	agc	2313	
Asn	Arg	Ile	Thr	Thr	Ala	Gln	Gly	Thr	Asn	His	Phe	Ile	Pro	Phe	Ser		
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gaa	act	gaa	gtc	aat	gcc	aaa	gaa	aga	tat	tct	agc	cac	gct	cta	tta	2361	
Glu	Thr	Glu	Val	Asn	Ala	Lys	Glu	Arg	Tyr	Ser	Ser	His	Ala	Leu	Leu		
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 Glu Phe Leu Lys Gly Glu Ile Lys Glu Leu Lys Glu Asn Asp Ser Leu
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 ttt tta agt gcc aaa aaa gaa aac aag ccc ctg aaa ttc agc ccg agc 2457
 Phe Leu Ser Ala Lys Lys Glu Asn Lys Pro Leu Lys Phe Ser Pro Ser
 790 795 800

 gct tca aag gtg ttt gac gct agc aga gag gtt tat cgc tat tac cac 2505
 Ala Ser Lys Val Phe Asp Ala Ser Arg Glu Val Tyr Arg Tyr Tyr His
 805 810 815 820

 aca caa gat ttc aca aac cgc ccc tat aac gct aac gca agc ctt tat 2553
 Thr Gln Asp Phe Thr Asn Arg Pro Tyr Asn Ala Asn Ala Ser Leu Tyr
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 Asp Ile Lys Glu Phe Phe Gln Gly Arg Asn Lys Gln Gly Lys Leu Asn
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 Ala Phe Thr Gln Leu Leu Thr Ile Gly Lys His Arg Leu Tyr Thr
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 His His Thr Pro Pro Tyr Leu Cys Ala Phe Asn Ala Phe Lys Met Glu
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 100 105 110
 Ile Asp Phe Ser Ile Thr Pro Ser Asn His Asn Thr Glu Gly Phe Lys

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Arg	Asn	Ser	Phe	Gln	His	Gln	Asn	Leu	Ile	His	Ile	Ser	Ile	Ile	Asp	
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Lys	Ser	Lys	Gln	Ser	His	Val	Lys	Tyr	Phe	Pro	Ile	Ile	Ala	Thr	Thr	
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Ile	Leu	Leu	Val	Ser	Val	Phe	Phe	Ser	Ile	Arg	His	Cys	Ile	Lys	Ala	
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Thr	Trp	Gln	Asn	Asp	Arg	Asp	Gln	Phe	Tyr	Ala	Pro	Tyr	Asp	Asp	Ala	
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Phe	His	Thr	Gln	Asn	Arg	Ile	Thr	Thr	Ala	Gln	Gly	Thr	Asn	His	Phe	
			740					745					750			
Ile	Pro	Phe	Ser	Glu	Thr	Glu	Val	Asn	Ala	Lys	Glu	Arg	Tyr	Ser	Ser	
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His	Ala	Leu	Leu	Glu	Phe	Leu	Lys	Gly	Glu	Ile	Lys	Glu	Leu	Lys	Glu	
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Asn	Asp	Ser	Leu	Phe	Leu	Ser	Ala	Lys	Lys	Glu	Asn	Lys	Pro	Leu	Lys	
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Phe	Ser	Pro	Ser	Ala	Ser	Lys	Val	Phe	Asp	Ala	Ser	Arg	Glu	Val	Tyr	
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Arg	Tyr	Tyr	His	Thr	Gln	Asp	Phe	Thr	Asn	Arg	Pro	Tyr	Asn	Ala	Asn	
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Ala	Ser	Leu	Tyr	Asp	Ile	Lys	Glu	Phe	Phe	Gln	Gly	Arg	Asn	Lys	Gln	
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Met Leu Glu Phe Ile Leu Lys Ile Gln Ala Arg Asp Ser Lys
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Gly Leu Val Ser Thr Ile Ser Thr Thr Ile Ala Asn Lys Gly Tyr Asn
15 20 25 30

atc gtc aaa aac gat gaa ttt gtt gat ccc tta aaa cag cgt ttt ttc 207
Ile Val Lys Asn Asp Glu Phe Val Asp Pro Leu Lys Gln Arg Phe Phe
35 40 45

atg cgg tta aaa atc caa aaa gaa atc aag ccc ttg aat act gaa att 255
Met Arg Leu Lys Ile Gln Lys Glu Ile Lys Pro Leu Asn Thr Glu Ile
50 55 60

aaa gag caa gaa gag caa tcc tta aag acc gct ctt ttt aaa gcc cta 303
Lys Glu Gln Glu Glu Gln Ser Leu Lys Thr Ala Leu Phe Lys Ala Leu
65 70 75

gaa aac ttt aac gag tta ttg att gaa gtc att tta acg cat aaa aaa 351
Glu Asn Phe Asn Glu Leu Leu Ile Glu Val Ile Leu Thr His Lys Lys
80 85 90

aac atc att ctg ctc gct act aaa gag agc cat tgc tta ggg gat ttg 399
Asn Ile Ile Leu Leu Ala Thr Lys Glu Ser His Cys Leu Gly Asp Leu
95 100 105 110

ctt tta agg gtg tat ggg ggg gaa ttg aac gct caa att tta ggc gtt 447
Leu Leu Arg Val Tyr Gly Gly Glu Leu Asn Ala Gln Ile Leu Gly Val
115 120 125

att tcc aac cac gag att tta cgc cct tta gtg gaa aaa ttt gac atc 495
Ile Ser Asn His Glu Ile Leu Arg Pro Leu Val Glu Lys Phe Asp Ile
130 135 140

cct tat ttt tat gcg cct tgc gac aat caa gtt ttg cat gaa aaa gaa 543
Pro Tyr Phe Tyr Ala Pro Cys Asp Asn Gln Val Leu His Glu Lys Glu
145 150 155

gtt tta gaa atc att aaa aac ctg gaa tta aag cac aaa gtg agt gca 591
Val Leu Glu Ile Ile Lys Asn Leu Glu Leu Lys His Lys Val Ser Ala
160 165 170

gac ttg ctc gtt tta gcc aaa tac atg cgc att tta agc cat gat ttt 639
Asp Leu Leu Val Leu Ala Lys Tyr Met Arg Ile Leu Ser His Asp Phe
175 180 185 190

acg aag cgc tat gaa aac cag atc tta aat atc cat cat agt ttc ttg 687
Thr Lys Arg Tyr Glu Asn Gln Ile Leu Asn Ile His His Ser Phe Leu
195 200 205

ccc gca ttc att ggg gct aat cct tac cag caa gcg ttt gaa agg ggc 735
Pro Ala Phe Ile Gly Ala Asn Pro Tyr Gln Gln Ala Phe Glu Arg Gly
210 215 220

gtg aaa gtc atc ggg gcc acg gcg cat ttt gtg aat gaa agc ctt gat 783
 Val Lys Val Ile Gly Ala Thr Ala His Phe Val Asn Glu Ser Leu Asp
 225 230 235

gct ggg ccg att atc ata caa gac act ctg ccc att aac cac aat tac 831
 Ala Gly Pro Ile Ile Ile Gln Asp Thr Leu Pro Ile Asn His Asn Tyr
 240 245 250

agc gtg gaa aaa atg cgc cta gcg ggt aag gat ata gaa aaa ctg gtt 879
 Ser Val Glu Lys Met Arg Leu Ala Gly Lys Asp Ile Glu Lys Leu Val
 255 260 265 270

tta gct agg gct tta aaa ctc gtt tta gaa gac aga gtc ttt gta cat 927
 Leu Ala Arg Ala Leu Lys Leu Val Leu Glu Asp Arg Val Phe Val His
 275 280 285

gaa aat aaa acg gtg gtg ttt tgaatgcttt tagatttcag caacctcaat 978
 Glu Asn Lys Thr Val Val Phe
 290

gaagaaccct taaaaaac 996

<210> 200
 <211> 293
 <212> PRT
 <213> Helicobacter pylori

<400> 200
 Met Leu Glu Phe Ile Leu Lys Ile Gln Ala Arg Asp Ser Lys Gly Leu
 1 5 10 15
 Val Ser Thr Ile Ser Thr Thr Ile Ala Asn Lys Gly Tyr Asn Ile Val
 20 25 30
 Lys Asn Asp Glu Phe Val Asp Pro Leu Lys Gln Arg Phe Phe Met Arg
 35 40 45
 Leu Lys Ile Gln Lys Glu Ile Lys Pro Leu Asn Thr Glu Ile Lys Glu
 50 55 60
 Gln Glu Glu Gln Ser Leu Lys Thr Ala Leu Phe Lys Ala Leu Glu Asn
 65 70 75 80
 Phe Asn Glu Leu Leu Ile Glu Val Ile Leu Thr His Lys Lys Asn Ile
 85 90 95
 Ile Leu Leu Ala Thr Lys Glu Ser His Cys Leu Gly Asp Leu Leu Leu
 100 105 110
 Arg Val Tyr Gly Gly Glu Leu Asn Ala Gln Ile Leu Gly Val Ile Ser
 115 120 125
 Asn His Glu Ile Leu Arg Pro Leu Val Glu Lys Phe Asp Ile Pro Tyr
 130 135 140
 Phe Tyr Ala Pro Cys Asp Asn Gln Val Leu His Glu Lys Glu Val Leu
 145 150 155 160
 Glu Ile Ile Lys Asn Leu Glu Leu Lys His Lys Val Ser Ala Asp Leu
 165 170 175
 Leu Val Leu Ala Lys Tyr Met Arg Ile Leu Ser His Asp Phe Thr Lys
 180 185 190
 Arg Tyr Glu Asn Gln Ile Leu Asn Ile His His Ser Phe Leu Pro Ala
 195 200 205

ggg ctt tcg ctt tta aaa acc gcc gat ttt aga gac gat tat tgc cat 440
 Gly Leu Ser Leu Leu Lys Thr Ala Asp Phe Arg Asp Asp Tyr Cys His
 120 125 130

 aaa aga gaa gag agc tat tat cat gca agg att tac aca aaa tac gct 488
 Lys Arg Glu Glu Ser Tyr Tyr His Ala Arg Ile Tyr Thr Lys Tyr Ala
 135 140 145

 caa act ttt cat tca aat ccc tat acc aat caa aaa aca ccc aat tct 536
 Gln Thr Phe His Ser Asn Pro Tyr Thr Asn Gln Lys Thr Pro Asn Ser
 150 155 160

 gat ctc tac tac cca gcg tta aat gag ggg aat tct ttt tct ata cag 584
 Asp Leu Tyr Tyr Pro Ala Leu Asn Glu Gly Asn Ser Phe Ser Ile Gln
 165 170 175

 ata atg ggc att tct gtg gct gaa ctt ttg aaa tct aaa aaa ttc ctt 632
 Ile Met Gly Ile Ser Val Ala Glu Leu Leu Lys Ser Lys Lys Phe Leu
 180 185 190 195

 tcg ctt gat gtt tct ttt aaa aag ggg agc gtg ttg tgg gga ggg agg 680
 Ser Leu Asp Val Ser Phe Lys Lys Gly Ser Val Leu Trp Gly Gly Arg
 200 205 210

 cct tat ttt agc gaa gtg ggg gag ttt atg ggg atg gct agc agc act 728
 Pro Tyr Phe Ser Glu Val Gly Glu Phe Met Gly Met Ala Ser Ser Thr
 215 220 225

 tta gaa aac caa gaa agt ctg gtg att atc cct aaa gaa aag atc gtg 776
 Leu Glu Asn Gln Glu Ser Leu Val Ile Ile Pro Lys Glu Lys Ile Val
 230 235 240

 caa ttt tta aac gct cta aaa aat caa aat att ttc cca aac att ccc 824
 Gln Phe Leu Asn Ala Leu Lys Asn Gln Asn Ile Phe Pro Asn Ile Pro
 245 250 255

 taagtttaag caaaccttaa gctttctatg actatacttt catttccttg tttcagca 882

<210> 202

<211> 259

<212> PRT

<213> *Helicobacter pylori*

<400> 202

Met Ala Phe Trp His Lys Arg Leu Ala Val Gly Cys Cys Ile Val Leu
 1 5 10 15
 Phe Ser Cys Met Met Asn Ala Asn Ser Ile Gln Ile Val Arg Asp Asp
 20 25 30
 Pro Pro Leu Asp Pro Thr Leu Pro Ala Trp Val Tyr Ser Val Ala Leu
 35 40 45
 Leu Lys Val Tyr Phe Ser Asp Gly Thr Tyr Lys Glu Gly Tyr Ala Thr
 50 55 60
 Leu Leu Lys Asn Gly Arg Tyr Ile Ala Ser Ser Glu Thr Leu Tyr Ser
 65 70 75 80

Asn	Gly	Leu	Tyr	Pro	Lys	Thr	Ile	Leu	Ala	Lys	Met	Gln	Asp	Ser	Ser	
				85					90					95		
Ala	Lys	Glu	Leu	Ile	Cys	Ile	Ala	Ser	Leu	Arg	Leu	Glu	Ala	Met	Asp	
			100					105					110			
Arg	Asn	Gln	Gly	Leu	Ser	Leu	Leu	Lys	Thr	Ala	Asp	Phe	Arg	Asp	Asp	
		115					120					125				
Tyr	Cys	His	Lys	Arg	Glu	Glu	Ser	Tyr	Tyr	His	Ala	Arg	Ile	Tyr	Thr	
	130					135					140					
Lys	Tyr	Ala	Gln	Thr	Phe	His	Ser	Asn	Pro	Tyr	Thr	Asn	Gln	Lys	Thr	
145				150					155						160	
Pro	Asn	Ser	Asp	Leu	Tyr	Tyr	Pro	Ala	Leu	Asn	Glu	Gly	Asn	Ser	Phe	
			165					170					175			
Ser	Ile	Gln	Ile	Met	Gly	Ile	Ser	Val	Ala	Glu	Leu	Leu	Lys	Ser	Lys	
		180					185						190			
Lys	Phe	Leu	Ser	Leu	Asp	Val	Ser	Phe	Lys	Lys	Gly	Ser	Val	Leu	Trp	
	195					200					205					
Gly	Gly	Arg	Pro	Tyr	Phe	Ser	Glu	Val	Gly	Glu	Phe	Met	Gly	Met	Ala	
	210				215				220							
Ser	Ser	Thr	Leu	Glu	Asn	Gln	Glu	Ser	Leu	Val	Ile	Ile	Pro	Lys	Glu	
225				230					235					240		
Lys	Ile	Val	Gln	Phe	Leu	Asn	Ala	Leu	Lys	Asn	Gln	Asn	Ile	Phe	Pro	
			245				250						255			

Asn Ile Pro

<210> 203
 <211> 669
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (88)...(603)

<400> 203
 aaaataagga ggaattgttt gattttacga ttggctggag caagcgtttt aacggcttgt 60
 gtcttttcgg ggtgtttttt tttaaaa atg ttt gat aaa aaa ctt tct agt aac 114
 Met Phe Asp Lys Lys Leu Ser Ser Asn
 1 5

gat tgg cat atc caa aaa gtg gaa atg aac cat caa gtc tat gac att 162
 Asp Trp His Ile Gln Lys Val Glu Met Asn His Gln Val Tyr Asp Ile
 10 15 20 25

gaa acc atg ctc gct gat agc gct ttt aga gag cat gaa gaa gag caa 210
 Glu Thr Met Leu Ala Asp Ser Ala Phe Arg Glu His Glu Glu Glu Gln
 30 35 40

gat tcc tct cta aat acc gct ttg cct gaa gat aaa aca gcg att gaa 258
 Asp Ser Ser Leu Asn Thr Ala Leu Pro Glu Asp Lys Thr Ala Ile Glu
 45 50 55

gcc aaa gag caa gag caa aaa gaa aaa aga aaa cgc tgg tat gag ctt 306
 Ala Lys Glu Gln Glu Gln Lys Glu Lys Arg Lys Arg Trp Tyr Glu Leu

60	65	70	
ttt aaa aag aaa cca aag ccc aaa agc tct atg gga gag ttt gtg ttt			354
Phe Lys Lys Lys Pro Lys Pro Lys Ser Ser Met Gly Glu Phe Val Phe			
75	80	85	
gat caa aaa gaa aat cgt att tat ggc aaa ggc tat tgc aac cgg tat			402
Asp Gln Lys Glu Asn Arg Ile Tyr Gly Lys Gly Tyr Cys Asn Arg Tyr			
90	95	100	105
ttt gcc agc tat gta tgg cag ggc gat agg cac att ggg att gaa gat			450
Phe Ala Ser Tyr Val Trp Gln Gly Asp Arg His Ile Gly Ile Glu Asp			
110	115	120	
agc ggg att tca aga aaa gtg tgt aaa gat gag cat tta atg gcg ttt			498
Ser Gly Ile Ser Arg Lys Val Cys Lys Asp Glu His Leu Met Ala Phe			
125	130	135	
gaa ttg gaa ttt atg gag aat ttt aag ggt aat ttt acg gta act aag			546
Glu Leu Glu Phe Met Glu Asn Phe Lys Gly Asn Phe Thr Val Thr Lys			
140	145	150	
ggc aag gac acg ctc att tta gac aac caa aaa atg aaa att tat ttg			594
Gly Lys Asp Thr Leu Ile Leu Asp Asn Gln Lys Met Lys Ile Tyr Leu			
155	160	165	
aaa acg cct tgagtgggtt tttgatttca aaacaatcta agatcactaa			643
Lys Thr Pro			
170			
attagggatt aaaaagaaat ttttaa			669
<210> 204			
<211> 172			
<212> PRT			
<213> Helicobacter pylori			
<400> 204			
Met Phe Asp Lys Lys Leu Ser Ser Asn Asp Trp His Ile Gln Lys Val			
1	5	10	15
Glu Met Asn His Gln Val Tyr Asp Ile Glu Thr Met Leu Ala Asp Ser			
20	25	30	
Ala Phe Arg Glu His Glu Glu Glu Gln Asp Ser Ser Leu Asn Thr Ala			
35	40	45	
Leu Pro Glu Asp Lys Thr Ala Ile Glu Ala Lys Glu Gln Glu Lys			
50	55	60	
Glu Lys Arg Lys Arg Trp Tyr Glu Leu Phe Lys Lys Lys Pro Lys Pro			
65	70	75	80
Lys Ser Ser Met Gly Glu Phe Val Phe Asp Gln Lys Glu Asn Arg Ile			
85	90	95	
Tyr Gly Lys Gly Tyr Cys Asn Arg Tyr Phe Ala Ser Tyr Val Trp Gln			
100	105	110	
Gly Asp Arg His Ile Gly Ile Glu Asp Ser Gly Ile Ser Arg Lys Val			
115	120	125	
Cys Lys Asp Glu His Leu Met Ala Phe Glu Leu Glu Phe Met Glu Asn			

130		135		140
Phe Lys Gly Asn Phe Thr Val Thr Lys Gly Lys Asp Thr Leu Ile Leu				
145		150		155
Asp Asn Gln Lys Met Lys Ile Tyr Leu Lys Thr Pro				160
	165		170	

<210> 205
 <211> 290
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (53)...(235)

<400> 205
 ttgagcttaa gaaacattga taattttgtg gaaaaaggct ctgctttgat ag ata aat 58
 Ile Asn
 1

ttg acg cta acc cct ata aaa cga ttt ttg gag aaa gga aat aat cat 106
 Leu Thr Leu Thr Pro Ile Lys Arg Phe Leu Glu Lys Gly Asn Asn His
 5 10 15

gag agc tac ggc gat aaa aat ctt ttc act ctc atc agc att agc cct 154
 Glu Ser Tyr Gly Asp Lys Asn Leu Phe Thr Leu Ile Ser Ile Ser Pro
 20 25 30

att gct tca tgg ttg ctt gag cat caa ttt aaa aca aat gct acc aga 202
 Ile Ala Ser Trp Leu Leu Glu His Gln Phe Lys Thr Asn Ala Thr Arg
 35 40 45 50

gat cag aac tta cga ttt gaa tgc gag ttc ttt tgaaatcacg caatgcgcta 255
 Asp Gln Asn Leu Arg Phe Glu Cys Glu Phe Phe
 55 60

aacctttgac tgaagtgagg ctcattagta ttttg 290

<210> 206
 <211> 61
 <212> PRT
 <213> Helicobacter pylori

<400> 206
 Ile Asn Leu Thr Leu Thr Pro Ile Lys Arg Phe Leu Glu Lys Gly Asn
 1 5 10 15
 Asn His Glu Ser Tyr Gly Asp Lys Asn Leu Phe Thr Leu Ile Ser Ile
 20 25 30
 Ser Pro Ile Ala Ser Trp Leu Leu Glu His Gln Phe Lys Thr Asn Ala
 35 40 45
 Thr Arg Asp Gln Asn Leu Arg Phe Glu Cys Glu Phe Phe
 50 55 60

<400> 207																			
tat	caa	aaa	aaa	taa	agg	gaaa	agact	ga	atg	ttg	aaa	aga	atg	ata	tta	tta	ggg	54	
									Met	Leu	Lys	Arg	Met	Ile	Leu	Leu	Gly		
									1										5
gct	ttg	ggt	gtt	tta	gcg	agc	gct	gaa	gag	agt	gcg	gct	ttt	gtg	gga	102			
Ala	Leu	Gly	Val	Leu	Ala	Ser	Ala	Glu	Glu	Ser	Ala	Ala	Phe	Val	Gly				
				10				15				20				25			
gtc	aat	tac	cag	gtg	agc	atg	ata	caa	aat	cag	act	aaa	atg	gtg	aat	150			
Val	Asn	Tyr	Gln	Val	Ser	Met	Ile	Gln	Asn	Gln	Thr	Lys	Met	Val	Asn				
				30				35				40							
gac	aac	ggc	ttg	caa	aag	cct	ttg	ata	aag	ttt	ccg	cct	tac	gca	gga	198			
Asp	Asn	Gly	Leu	Gln	Lys	Pro	Leu	Ile	Lys	Phe	Pro	Pro	Tyr	Ala	Gly				
				45				50				55							
gcg	ggt	ttt	gaa	gtg	ggc	tat	aag	caa	ttt	ttt	ggt	aag	aaa	aaa	tgg	246			
Ala	Gly	Phe	Glu	Val	Gly	Tyr	Lys	Gln	Phe	Phe	Gly	Lys	Lys	Lys	Trp				
				60				65				70							
ttt	ggc	atg	cgt	tat	tat	ggg	ttt	ttt	gac	tac	gcg	cac	aac	cgc	ttt	294			
Phe	Gly	Met	Arg	Tyr	Tyr	Gly	Phe	Phe	Asp	Tyr	Ala	His	Asn	Arg	Phe				
				75				80				85							
ggc	gtg	atg	aaa	aag	ggc	att	ccg	gtg	ggc	gat	agt	ggg	ttt	att	tac	342			
Gly	Val	Met	Lys	Lys	Gly	Ile	Pro	Val	Gly	Asp	Ser	Gly	Phe	Ile	Tyr				
				90				95				100				105			
aat	agt	ttt	agt	ttt	gga	ggg	aac	act	tta	acg	gaa	agg	gat	tcc	tat	390			
Asn	Ser	Phe	Ser	Phe	Gly	Gly	Asn	Thr	Leu	Thr	Glu	Arg	Asp	Ser	Tyr				
				110				115				120							
cag	ggg	caa	tac	tat	gtc	aat	tta	ttc	act	tat	ggc	gtg	ggg	tta	gat	438			
Gln	Gly	Gln	Tyr	Tyr	Val	Asn	Leu	Phe	Thr	Tyr	Gly	Val	Gly	Leu	Asp				
				125				130				135							
acg	ctg	tgg	aat	ttt	gtg	aat	aaa	gaa	aac	atg	gtt	ttt	ggt	ttt	gtg	486			
Thr	Leu	Trp	Asn	Phe	Val	Asn	Lys	Glu	Asn	Met	Val	Phe	Gly	Phe	Val				
				140				145				150							
gtg	ggg	atc	caa	tta	gcg	ggg	gat	agt	tgg	gca	acg	agc	atc	agt	aaa	534			
Val	Gly	Ile	Gln	Leu	Ala	Gly	Asp	Ser	Trp	Ala	Thr	Ser	Ile	Ser	Lys				
				155				160				165							
gaa	atc	gct	cat	tat	gca	aaa	cac	cac	agc	aat	tcc	agt	tat	agc	ccg	582			

Glu Ile Ala His Tyr Ala Lys His His Ser Asn Ser Ser Tyr Ser Pro
 170 175 180 185

 gcc aat ttc cag ttt tta tgg aag ttt ggg gtc cgc acc cat atc gct 630
 Ala Asn Phe Gln Phe Leu Trp Lys Phe Gly Val Arg Thr His Ile Ala
 190 195 200

 aaa cac aat agc cta gaa tta ggg att aaa gtg cct acg atc aca cac 678
 Lys His Asn Ser Leu Glu Leu Gly Ile Lys Val Pro Thr Ile Thr His
 205 210 215

 cag ctt ttc tct ctt acc aac gaa aag gga tac acc tta cag gct gat 726
 Gln Leu Phe Ser Leu Thr Asn Glu Lys Gly Tyr Thr Leu Gln Ala Asp
 220 225 230

 gtg cgt aga gtt tat gcg ttt caa atc agt tac ttg agg gat ttt 771
 Val Arg Arg Val Tyr Ala Phe Gln Ile Ser Tyr Leu Arg Asp Phe
 235 240 245

 taacccttt ttagatacaa tcacgcctga aactatcca 810

<210> 208
 <211> 248
 <212> PRT
 <213> *Helicobacter pylori*

<400> 208
 Met Leu Lys Arg Met Ile Leu Leu Gly Ala Leu Gly Val Leu Ala Ser
 1 5 10 15
 Ala Glu Glu Ser Ala Ala Phe Val Gly Val Asn Tyr Gln Val Ser Met
 20 25 30
 Ile Gln Asn Gln Thr Lys Met Val Asn Asp Asn Gly Leu Gln Lys Pro
 35 40 45
 Leu Ile Lys Phe Pro Pro Tyr Ala Gly Ala Gly Phe Glu Val Gly Tyr
 50 55 60
 Lys Gln Phe Phe Gly Lys Lys Lys Trp Phe Gly Met Arg Tyr Tyr Gly
 65 70 75 80
 Phe Phe Asp Tyr Ala His Asn Arg Phe Gly Val Met Lys Lys Gly Ile
 85 90 95
 Pro Val Gly Asp Ser Gly Phe Ile Tyr Asn Ser Phe Ser Phe Gly Gly
 100 105 110
 Asn Thr Leu Thr Glu Arg Asp Ser Tyr Gln Gly Gln Tyr Tyr Val Asn
 115 120 125
 Leu Phe Thr Tyr Gly Val Gly Leu Asp Thr Leu Trp Asn Phe Val Asn
 130 135 140
 Lys Glu Asn Met Val Phe Gly Phe Val Val Gly Ile Gln Leu Ala Gly
 145 150 155 160
 Asp Ser Trp Ala Thr Ser Ile Ser Lys Glu Ile Ala His Tyr Ala Lys
 165 170 175
 His His Ser Asn Ser Ser Tyr Ser Pro Ala Asn Phe Gln Phe Leu Trp
 180 185 190
 Lys Phe Gly Val Arg Thr His Ile Ala Lys His Asn Ser Leu Glu Leu
 195 200 205
 Gly Ile Lys Val Pro Thr Ile Thr His Gln Leu Phe Ser Leu Thr Asn
 210 215 220

Glu Lys Gly Tyr Thr Leu Gln Ala Asp Val Arg Arg Val Tyr Ala Phe
 225 230 235 240
 Gln Ile Ser Tyr Leu Arg Asp Phe
 245

<210> 209
 <211> 1354
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (190)...(1299)

<400> 209
 agtaagcttg attttaaaaa accaaatgcc cccaaagcga taggccccct taatagccaa 60
 ctcaacgcta ttaagtgggg cgagttcaga ttgggggatt tgtttgaagt gttgtcaagt 120
 aagaaaatatt atcatgccaa cagcataaaa atccatgaca cgcaaataga aaacagctac 180
 ccttatgtc gtg cgc gct gca acc aat aat ggt ata aaa ggc ttt att ata 231
 Val Arg Ala Ala Thr Asn Asn Gly Ile Lys Gly Phe Ile Ile
 1 5 10
 gat gac cct aca ttt gct aat aaa aaa aat acc ctt tcg ttc gcg caa 279
 Asp Asp Pro Thr Phe Ala Asn Lys Lys Asn Thr Leu Ser Phe Ala Gln
 15 20 25 30
 gac act ttc act gtg ttt tat caa aaa caa cct tat ttt aca ggc aat 327
 Asp Thr Phe Thr Val Phe Tyr Gln Lys Gln Pro Tyr Phe Thr Gly Asn
 35 40 45
 aag gtt aaa att tta aaa cca aaa ttt gct ttc aaa agc cct aaa att 375
 Lys Val Lys Ile Leu Lys Pro Lys Phe Ala Phe Lys Ser Pro Lys Ile
 50 55 60
 tta cat tct ata agc gcg att tta caa ttt att tta aaa ccc tta act 423
 Leu His Ser Ile Ser Ala Ile Leu Gln Phe Ile Leu Lys Pro Leu Thr
 65 70 75
 tgg ggg cta ggc tct aca aca gaa agc att gcg gag ttt aaa ttt tct 471
 Trp Gly Leu Gly Ser Thr Thr Glu Ser Ile Ala Glu Phe Lys Phe Ser
 80 85 90
 cta ccc cta aaa ccc acc gct aac gct caa acc ctt gag gat att gat 519
 Leu Pro Leu Lys Pro Thr Ala Asn Ala Gln Thr Leu Glu Asp Ile Asp
 95 100 105 110
 ttt gat ttc atg gaa aaa ttc ata gcc gaa ctt gag cag tgt cgg ctc 567
 Phe Asp Phe Met Glu Lys Phe Ile Ala Glu Leu Glu Gln Cys Arg Leu
 115 120 125
 gcc gaa ctt gag cag tgt cgg ctc gcc gaa ctt cag gct tat tta aaa 615
 Ala Glu Leu Glu Gln Cys Arg Leu Ala Glu Leu Gln Ala Tyr Leu Lys
 130 135 140

gct aca ggg cta gaa aac acc acc ctt tct aac gat gaa gaa aac gcc	663
Ala Thr Gly Leu Glu Asn Thr Thr Leu Ser Asn Asp Glu Glu Asn Ala	
145 150 155	
ctt aat gtt ttc aat aat tct ggg ggg ggg ggg ggt aat acc cca tgc	711
Leu Asn Val Phe Asn Asn Ser Gly Gly Gly Gly Gly Asn Thr Pro Cys	
160 165 170	
ggc tta aca tgg caa agc ttt aga tta ggg gat ttg ttt gaa att gaa	759
Gly Leu Thr Trp Gln Ser Phe Arg Leu Gly Asp Leu Phe Glu Ile Glu	
175 180 185 190	
aaa acc tta agc ttt aat aaa gac gct tta acg caa gga gaa gat tat	807
Lys Thr Leu Ser Phe Asn Lys Asp Ala Leu Thr Gln Gly Glu Asp Tyr	
195 200 205	
gat tat att aca agg act tcg caa aat caa ggc gtt ttg caa act aca	855
Asp Tyr Ile Thr Arg Thr Ser Gln Asn Gln Gly Val Leu Gln Thr Thr	
210 215 220	
gga ttt gtc aat gca gaa aat tta aac cca cca ttt act tgg agt tta	903
Gly Phe Val Asn Ala Glu Asn Leu Asn Pro Pro Phe Thr Trp Ser Leu	
225 230 235	
ggg ctt ttg caa atg gat ttt ttc tat cgt aaa aag tca tgg tat gcg	951
Gly Leu Leu Gln Met Asp Phe Phe Tyr Arg Lys Lys Ser Trp Tyr Ala	
240 245 250	
gga caa ttc atg cga aaa atc aca cca aaa act gaa att gaa aat aaa	999
Gly Gln Phe Met Arg Lys Ile Thr Pro Lys Thr Glu Ile Glu Asn Lys	
255 260 265 270	
att gat tta cgc ata gcc aac tac ttc aca acg ctt tta aac gcc tta	1047
Ile Asp Leu Arg Ile Ala Asn Tyr Phe Thr Thr Leu Leu Asn Ala Leu	
275 280 285	
aaa cgc cct tta tta agc gta ttg gtt aga gat att gat aaa act ttt	1095
Lys Arg Pro Leu Leu Ser Val Leu Val Arg Asp Ile Asp Lys Thr Phe	
290 295 300	
agg gag caa aaa atc caa cta ccc cta aaa ccc acc gct aaa act caa	1143
Arg Glu Gln Lys Ile Gln Leu Pro Leu Lys Pro Thr Ala Lys Thr Gln	
305 310 315	
acc ctt gat ggt att gat ttt gat ttc atg cac acc ctt atc aac gcc	1191
Thr Leu Asp Gly Ile Asp Phe Asp Phe Met His Thr Leu Ile Asn Ala	
320 325 330	
cta atg aag caa acc att caa ggc gtg gct caa tac tgc gac gct aaa	1239
Leu Met Lys Gln Thr Ile Gln Gly Val Ala Gln Tyr Cys Asp Ala Lys	
335 340 345 350	
ata caa gct aca aaa gag gtt atc agc caa gaa gcg ccc gtt caa aaa	1287
Ile Gln Ala Thr Lys Glu Val Ile Ser Gln Glu Ala Pro Val Gln Lys	
355 360 365	

gac tcg tta ttt taaaaggggt tttaagcgcg ctagcttggtg ttacaataaa 1339
 Asp Ser Leu Phe
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cttaaaattc gcttg 1354

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 <213> Helicobacter pylori

<400> 210
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 35 40 45
 Lys Ile Leu Lys Pro Lys Phe Ala Phe Lys Ser Pro Lys Ile Leu His
 50 55 60
 Ser Ile Ser Ala Ile Leu Gln Phe Ile Leu Lys Pro Leu Thr Trp Gly
 65 70 75 80
 Leu Gly Ser Thr Thr Glu Ser Ile Ala Glu Phe Lys Phe Ser Leu Pro
 85 90 95
 Leu Lys Pro Thr Ala Asn Ala Gln Thr Leu Glu Asp Ile Asp Phe Asp
 100 105 110
 Phe Met Glu Lys Phe Ile Ala Glu Leu Glu Gln Cys Arg Leu Ala Glu
 115 120 125
 Leu Glu Gln Cys Arg Leu Ala Glu Leu Gln Ala Tyr Leu Lys Ala Thr
 130 135 140
 Gly Leu Glu Asn Thr Thr Leu Ser Asn Asp Glu Glu Asn Ala Leu Asn
 145 150 155 160
 Val Phe Asn Asn Ser Gly Gly Gly Gly Gly Asn Thr Pro Cys Gly Leu
 165 170 175
 Thr Trp Gln Ser Phe Arg Leu Gly Asp Leu Phe Glu Ile Glu Lys Thr
 180 185 190
 Leu Ser Phe Asn Lys Asp Ala Leu Thr Gln Gly Glu Asp Tyr Asp Tyr
 195 200 205
 Ile Thr Arg Thr Ser Gln Asn Gln Gly Val Leu Gln Thr Thr Gly Phe
 210 215 220
 Val Asn Ala Glu Asn Leu Asn Pro Pro Phe Thr Trp Ser Leu Gly Leu
 225 230 235 240
 Leu Gln Met Asp Phe Phe Tyr Arg Lys Lys Ser Trp Tyr Ala Gly Gln
 245 250 255
 Phe Met Arg Lys Ile Thr Pro Lys Thr Glu Ile Glu Asn Lys Ile Asp
 260 265 270
 Leu Arg Ile Ala Asn Tyr Phe Thr Thr Leu Leu Asn Ala Leu Lys Arg
 275 280 285
 Pro Leu Leu Ser Val Leu Val Arg Asp Ile Asp Lys Thr Phe Arg Glu
 290 295 300
 Gln Lys Ile Gln Leu Pro Leu Lys Pro Thr Ala Lys Thr Gln Thr Leu
 305 310 315 320
 Asp Gly Ile Asp Phe Asp Phe Met His Thr Leu Ile Asn Ala Leu Met
 325 330 335

His Ala Asp Asn Val Ile Leu Arg Thr Leu Ala Ile Arg Val Ala Arg
 50 55 60
 Glu Met Ala Phe
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<210> 213
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 <213> Helicobacter pylori

<220>
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 <222> (51)...(998)

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 Glu Phe Ser Leu Trp Cys Asp Phe Ile Glu Arg Asp Phe Leu Glu Asn
 5 10 15
 gac ttt tta aag ctc att aat aag ggg gct att tgc ggg gca acg agt 152
 Asp Phe Leu Lys Leu Ile Asn Lys Gly Ala Ile Cys Gly Ala Thr Ser
 20 25 30
 aac cct agt ttg ttt tgc gaa gcg atc aca aaa agc gcg ttt tat aaa 200
 Asn Pro Ser Leu Phe Cys Glu Ala Ile Thr Lys Ser Ala Phe Tyr Lys
 35 40 45 50
 gat gaa atc gct aaa ctc aaa ggc aaa aaa gct aaa gaa att tat gaa 248
 Asp Glu Ile Ala Lys Leu Lys Gly Lys Lys Ala Lys Glu Ile Tyr Glu
 55 60 65
 act ctg gcg tta aag gat att tta caa gct tct agc gcg ttg atg cct 296
 Thr Leu Ala Leu Lys Asp Ile Leu Gln Ala Ser Ser Ala Leu Met Pro
 70 75 80
 tta tat gaa aaa gac cct aac aat ggc tac att agc cta gaa att gac 344
 Leu Tyr Glu Lys Asp Pro Asn Asn Gly Tyr Ile Ser Leu Glu Ile Asp
 85 90 95
 cct ttt tta gaa gat gat gcc gct aaa agc att gat gaa gcc aag cgg 392
 Pro Phe Leu Glu Asp Asp Ala Ala Lys Ser Ile Asp Glu Ala Lys Arg
 100 105 110
 ttg ttc aaa aca tta aac cgc cct aat gtg atg att aaa gtc cca gcg 440
 Leu Phe Lys Thr Leu Asn Arg Pro Asn Val Met Ile Lys Val Pro Ala
 115 120 125 130
 agt gaa agc ggg att gaa gtg gtt agc gct tta act caa gcc tct att 488
 Ser Glu Ser Gly Ile Glu Val Val Ser Ala Leu Thr Gln Ala Ser Ile
 135 140 145

cct gtt aat gta act tta gtc ttt tcg cct aaa att gcc ggt gaa atc	536
Pro Val Asn Val Thr Leu Val Phe Ser Pro Lys Ile Ala Gly Glu Ile	
150 155 160	
gct caa atc tta gcc aaa gaa gcg caa aaa aga gcg gtc att agc gtg	584
Ala Gln Ile Leu Ala Lys Glu Ala Gln Lys Arg Ala Val Ile Ser Val	
165 170 175	
ttt gtc tca cga ttt gac aaa gaa ata gac cct tta gtg cca aaa aat	632
Phe Val Ser Arg Phe Asp Lys Glu Ile Asp Pro Leu Val Pro Lys Asn	
180 185 190	
ttg caa gct caa agc ggg att atc aac gct acc gag tgc tat tat caa	680
Leu Gln Ala Gln Ser Gly Ile Ile Asn Ala Thr Glu Cys Tyr Tyr Gln	
195 200 205 210	
att aat cag cat gcc aat aag cta aca agc acc ctt ttt gca tcc aca	728
Ile Asn Gln His Ala Asn Lys Leu Thr Ser Thr Leu Phe Ala Ser Thr	
215 220 225	
ggc gtt aaa tcc aat tct tta gct aaa gat tac tac att aaa gcg ctg	776
Gly Val Lys Ser Asn Ser Leu Ala Lys Asp Tyr Tyr Ile Lys Ala Leu	
230 235 240	
tgt ttt aaa aac tct atc aat aca gcc cct cta gag gct tta aac gct	824
Cys Phe Lys Asn Ser Ile Asn Thr Ala Pro Leu Glu Ala Leu Asn Ala	
245 250 255	
tat ttg ctt gac cca aac acc gag tgt caa acc cct tta aag act aca	872
Tyr Leu Leu Asp Pro Asn Thr Glu Cys Gln Thr Pro Leu Lys Thr Thr	
260 265 270	
gaa att gaa gcg ttt aaa aaa gaa tta aaa gtg cac aac att gat tta	920
Glu Ile Glu Ala Phe Lys Lys Glu Leu Lys Val His Asn Ile Asp Leu	
275 280 285 290	
gaa aac acc gct caa aaa ctc ctt aaa gaa ggc ttg ata gcg ttc aaa	968
Glu Asn Thr Ala Gln Lys Leu Leu Lys Glu Gly Leu Ile Ala Phe Lys	
295 300 305	
caa tcc ttt gaa aag ctt tta agc agt ttt tgattttttaa gggttttttg	1018
Gln Ser Phe Glu Lys Leu Leu Ser Ser Phe	
310 315	
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			20					25					30				
Thr	Ser	Asn	Pro	Ser	Leu	Phe	Cys	Glu	Ala	Ile	Thr	Lys	Ser	Ala	Phe		
		35					40					45					
Tyr	Lys	Asp	Glu	Ile	Ala	Lys	Leu	Lys	Gly	Lys	Lys	Ala	Lys	Glu	Ile		
	50					55					60						
Tyr	Glu	Thr	Leu	Ala	Leu	Lys	Asp	Ile	Leu	Gln	Ala	Ser	Ser	Ala	Leu		
65					70					75					80		
Met	Pro	Leu	Tyr	Glu	Lys	Asp	Pro	Asn	Asn	Gly	Tyr	Ile	Ser	Leu	Glu		
				85					90					95			
Ile	Asp	Pro	Phe	Leu	Glu	Asp	Asp	Ala	Ala	Lys	Ser	Ile	Asp	Glu	Ala		
			100					105					110				
Lys	Arg	Leu	Phe	Lys	Thr	Leu	Asn	Arg	Pro	Asn	Val	Met	Ile	Lys	Val		
		115					120					125					
Pro	Ala	Ser	Glu	Ser	Gly	Ile	Glu	Val	Val	Ser	Ala	Leu	Thr	Gln	Ala		
	130					135					140						
Ser	Ile	Pro	Val	Asn	Val	Thr	Leu	Val	Phe	Ser	Pro	Lys	Ile	Ala	Gly		
145					150					155					160		
Glu	Ile	Ala	Gln	Ile	Leu	Ala	Lys	Glu	Ala	Gln	Lys	Arg	Ala	Val	Ile		
			165					170					175				
Ser	Val	Phe	Val	Ser	Arg	Phe	Asp	Lys	Glu	Ile	Asp	Pro	Leu	Val	Pro		
			180				185						190				
Lys	Asn	Leu	Gln	Ala	Gln	Ser	Gly	Ile	Ile	Asn	Ala	Thr	Glu	Cys	Tyr		
	195						200						205				
Tyr	Gln	Ile	Asn	Gln	His	Ala	Asn	Lys	Leu	Thr	Ser	Thr	Leu	Phe	Ala		
	210					215						220					
Ser	Thr	Gly	Val	Lys	Ser	Asn	Ser	Leu	Ala	Lys	Asp	Tyr	Tyr	Ile	Lys		
225					230					235					240		
Ala	Leu	Cys	Phe	Lys	Asn	Ser	Ile	Asn	Thr	Ala	Pro	Leu	Glu	Ala	Leu		
				245					250					255			
Asn	Ala	Tyr	Leu	Asp	Pro	Asn	Thr	Glu	Cys	Gln	Thr	Pro	Leu	Lys			
		260					265						270				
Thr	Thr	Glu	Ile	Glu	Ala	Phe	Lys	Lys	Glu	Leu	Lys	Val	His	Asn	Ile		
		275					280						285				
Asp	Leu	Glu	Asn	Thr	Ala	Gln	Lys	Leu	Leu	Lys	Glu	Gly	Leu	Ile	Ala		
	290					295					300						
Phe	Lys	Gln	Ser	Phe	Glu	Lys	Leu	Leu	Ser	Ser	Phe						
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<210> 215

<211> 1254

<212> DNA

<213> Helicobacter pylori

<220>

<221> CDS

<222> (55)...(1215)

<400> 215

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Leu	Asn	Phe	Met	Thr	Lys	Lys	Lys	Asn	Arg	Met	Gln	Asp	Cys	Lys	Met		
			5					10					15				
ggt	tgt	aaa	aat	ttt	aat	cgt	aag	gaa	tct	ggt	ttg	ata	gct	caa	tct	153	
Val	Cys	Lys	Asn	Phe	Asn	Arg	Lys	Glu	Ser	Val	Leu	Ile	Ala	Gln	Ser		
		20					25				30						
tta	gat	att	tct	aaa	aaa	ggt	tcg	gta	att	tta	ggc	gct	ctt	ttg	agt	201	
Leu	Asp	Ile	Ser	Lys	Lys	Gly	Ser	Val	Ile	Leu	Gly	Ala	Leu	Leu	Ser		
	35					40					45						
tcg	tta	tgg	ctg	aca	aac	ccc	tta	aat	gcc	cat	gaa	aag	aat	ggc	gcg	249	
Ser	Leu	Trp	Leu	Thr	Asn	Pro	Leu	Asn	Ala	His	Glu	Lys	Asn	Gly	Ala		
	50				55				60						65		
ttt	gtg	ggg	att	agc	ttg	gaa	gtg	ggt	agg	gcc	gat	caa	aag	aca	aac	297	
Phe	Val	Gly	Ile	Ser	Leu	Glu	Val	Gly	Arg	Ala	Asp	Gln	Lys	Thr	Asn		
				70				75						80			
gct	tat	aaa	aac	ggc	gag	ttg	ttt	caa	gtg	cct	ttt	ggc	gat	ggt	tcg	345	
Ala	Tyr	Lys	Asn	Gly	Glu	Leu	Phe	Gln	Val	Pro	Phe	Gly	Asp	Val	Ser		
			85				90					95					
gct	aat	gat	gat	ggc	aaa	ggt	cct	gac	ggg	cag	acc	ggt	ggc	tgt	cag	393	
Ala	Asn	Asp	Asp	Gly	Lys	Val	Pro	Asp	Gly	Gln	Thr	Gly	Gly	Cys	Gln		
		100					105					110					
cca	gct	tca	ggg	acg	cca	gga	acg	cca	ggc	tac	act	aaa	gct	aac	tgc	441	
Pro	Ala	Ser	Gly	Thr	Pro	Gly	Thr	Pro	Gly	Tyr	Thr	Lys	Ala	Asn	Cys		
	115					120					125						
gtg	gtc	aat	tgg	act	tcg	cgc	acc	atg	ctt	agc	acc	aat	aaa	aac	att	489	
Val	Val	Asn	Trp	Thr	Ser	Arg	Thr	Met	Leu	Ser	Thr	Asn	Lys	Asn	Ile		
	130				135				140					145			
cct	ggc	cgt	aac	cag	ccg	atg	tat	ggg	cta	ggc	gtg	atg	aca	ggc	tat	537	
Pro	Gly	Arg	Asn	Gln	Pro	Met	Tyr	Gly	Leu	Gly	Val	Met	Thr	Gly	Tyr		
			150					155						160			
aag	cat	ttt	atc	ggt	aaa	aaa	aga	tgg	ttt	ggg	ttg	cgc	tat	tac	ggc	585	
Lys	His	Phe	Ile	Gly	Lys	Lys	Arg	Trp	Phe	Gly	Leu	Arg	Tyr	Tyr	Gly		
			165				170					175					
ttt	ttt	gat	tat	ggg	cat	acc	aat	ttc	tct	aac	tcc	aga	gcc	gct	aac	633	
Phe	Phe	Asp	Tyr	Gly	His	Thr	Asn	Phe	Ser	Asn	Ser	Arg	Ala	Ala	Asn		
		180					185					190					
gct	ata	tcg	cct	ttt	tat	ttg	agc	gat	caa	aaa	gcc	gac	atg	tat	act	681	
Ala	Ile	Ser	Pro	Phe	Tyr	Leu	Ser	Asp	Gln	Lys	Ala	Asp	Met	Tyr	Thr		
	195					200					205						
tat	ggt	ttt	ggc	aca	gac	atg	ctt	ttt	aac	att	ata	gat	aag	cct	aaa	729	
Tyr	Gly	Phe	Gly	Thr	Asp	Met	Leu	Phe	Asn	Ile	Ile	Asp	Lys	Pro	Lys		
	210				215				220					225			

gcc acg gcc ggg ttt ttt tta ggc gtg aat ttt gcg ggt aac act tgg 777
 Ala Thr Ala Gly Phe Phe Leu Gly Val Asn Phe Ala Gly Asn Thr Trp
 230 235 240

act aat aat cgt gtg ggg tat ttt aag gac ggg tat gtt tat ggc gtc 825
 Thr Asn Asn Arg Val Gly Tyr Phe Lys Asp Gly Tyr Val Tyr Gly Val
 245 250 255

aat acg gac gct gac gct tac atg act aac gct gat ggc aca atc act 873
 Asn Thr Asp Ala Asp Ala Tyr Met Thr Asn Ala Asp Gly Thr Ile Thr
 260 265 270

tgc ggg gac acg acg ccg gcg agt tgc aat gtg ggg att aac cct aat 921
 Cys Gly Asp Thr Thr Pro Ala Ser Cys Asn Val Gly Ile Asn Pro Asn
 275 280 285

agc gtc tat acc aca gga aaa ttg aac gct aag gtg aat cac acg att 969
 Ser Val Tyr Thr Thr Gly Lys Leu Asn Ala Lys Val Asn His Thr Ile
 290 295 300 305

ttc caa ttt tta gtg aat gtg ggc att aga act aat att ttt gaa cac 1017
 Phe Gln Phe Leu Val Asn Val Gly Ile Arg Thr Asn Ile Phe Glu His
 310 315 320

cat ggc att gag ttt ggc atc aaa atc ccc acg ctc cct aac tac ttt 1065
 His Gly Ile Glu Phe Gly Ile Lys Ile Pro Thr Leu Pro Asn Tyr Phe
 325 330 335

ttc aaa ggt tct act acc ata aga gcg aaa aaa caa ggc ccg cta gag 1113
 Phe Lys Gly Ser Thr Thr Ile Arg Ala Lys Lys Gln Gly Pro Leu Glu
 340 345 350

aat ggc caa cca acc act atc acc gga gca gaa acc aat ttc agc tta 1161
 Asn Gly Gln Pro Thr Thr Ile Thr Gly Ala Glu Thr Asn Phe Ser Leu
 355 360 365

acc caa acc tta cgc cgt cag tat tct atg tat ttg cgc tat gtt tat 1209
 Thr Gln Thr Leu Arg Arg Gln Tyr Ser Met Tyr Leu Arg Tyr Val Tyr
 370 375 380 385

act ttt taagtttggg aggggttttta ggcaaggcctt agagatgaa 1254
 Thr Phe

<210> 216

<211> 387

<212> PRT

<213> *Helicobacter pylori*

<400> 216

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 Met Val Cys Lys Asn Phe Asn Arg Lys Glu Ser Val Leu Ile Ala Gln
 20 25 30

Ser Leu Asp Ile Ser Lys Lys Gly Ser Val Ile Leu Gly Ala Leu Leu
 35 40 45
 Ser Ser Leu Trp Leu Thr Asn Pro Leu Asn Ala His Glu Lys Asn Gly
 50 55 60
 Ala Phe Val Gly Ile Ser Leu Glu Val Gly Arg Ala Asp Gln Lys Thr
 65 70 75 80
 Asn Ala Tyr Lys Asn Gly Glu Leu Phe Gln Val Pro Phe Gly Asp Val
 85 90 95
 Ser Ala Asn Asp Asp Gly Lys Val Pro Asp Gly Gln Thr Gly Gly Cys
 100 105 110
 Gln Pro Ala Ser Gly Thr Pro Gly Thr Pro Gly Tyr Thr Lys Ala Asn
 115 120 125
 Cys Val Val Asn Trp Thr Ser Arg Thr Met Leu Ser Thr Asn Lys Asn
 130 135 140
 Ile Pro Gly Arg Asn Gln Pro Met Tyr Gly Leu Gly Val Met Thr Gly
 145 150 155 160
 Tyr Lys His Phe Ile Gly Lys Lys Arg Trp Phe Gly Leu Arg Tyr Tyr
 165 170 175
 Gly Phe Phe Asp Tyr Gly His Thr Asn Phe Ser Asn Ser Arg Ala Ala
 180 185 190
 Asn Ala Ile Ser Pro Phe Tyr Leu Ser Asp Gln Lys Ala Asp Met Tyr
 195 200 205
 Thr Tyr Gly Phe Gly Thr Asp Met Leu Phe Asn Ile Ile Asp Lys Pro
 210 215 220
 Lys Ala Thr Ala Gly Phe Phe Leu Gly Val Asn Phe Ala Gly Asn Thr
 225 230 235 240
 Trp Thr Asn Asn Arg Val Gly Tyr Phe Lys Asp Gly Tyr Val Tyr Gly
 245 250 255
 Val Asn Thr Asp Ala Asp Ala Tyr Met Thr Asn Ala Asp Gly Thr Ile
 260 265 270
 Thr Cys Gly Asp Thr Thr Pro Ala Ser Cys Asn Val Gly Ile Asn Pro
 275 280 285
 Asn Ser Val Tyr Thr Thr Gly Lys Leu Asn Ala Lys Val Asn His Thr
 290 295 300
 Ile Phe Gln Phe Leu Val Asn Val Gly Ile Arg Thr Asn Ile Phe Glu
 305 310 315 320
 His His Gly Ile Glu Phe Gly Ile Lys Ile Pro Thr Leu Pro Asn Tyr
 325 330 335
 Phe Phe Lys Gly Ser Thr Thr Ile Arg Ala Lys Lys Gln Gly Pro Leu
 340 345 350
 Glu Asn Gly Gln Pro Thr Thr Ile Thr Gly Ala Glu Thr Asn Phe Ser
 355 360 365
 Leu Thr Gln Thr Leu Arg Arg Gln Tyr Ser Met Tyr Leu Arg Tyr Val
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 Tyr Thr Phe
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<210> 217
 <211> 534
 <212> DNA
 <213> Helicobacter pylori

 <220>
 <221> CDS

<222> (47)...(481)

<400> 217

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Ile Tyr Pro Tyr Val Leu Val Val His Leu Leu Cys Ala Ile Ile Phe
   5                               10                               15

att ggc tac ttg ttt ttt gat ggg gta att ttc cct aat gtg aag aaa      151
Ile Gly Tyr Leu Phe Phe Asp Gly Val Ile Phe Pro Asn Val Lys Lys
  20                               25                               30                               35

atg ttt ggc gaa gag ttt gcc aat aaa gcg aat aca gga atc act caa      199
Met Phe Gly Glu Glu Phe Ala Asn Lys Ala Asn Thr Gly Ile Thr Gln
                40                               45                               50

aga gcg atc aaa atc atg ccc tta tgc gtt tta ggg ctt gtt tta aca      247
Arg Ala Ile Lys Ile Met Pro Leu Cys Val Leu Gly Leu Val Leu Thr
                55                               60                               65

ggg ggc atg atg ctt agc caa tac atg ggg ggc gat aaa ggc tgg tgt      295
Gly Gly Met Met Leu Ser Gln Tyr Met Gly Gly Asp Lys Gly Trp Cys
  70                               75                               80

gaa acc cct ttt caa aag ata ctc atg ctt aaa gtg atc tta gcg tta      343
Glu Thr Pro Phe Gln Lys Ile Leu Met Leu Lys Val Ile Leu Ala Leu
  85                               90                               95

agc att ttt ctt ttg gtg ctt ttt tct tta tgc tgt aag ttt ttg ggc      391
Ser Ile Phe Leu Leu Val Leu Phe Ser Leu Ser Cys Lys Phe Leu Gly
100                               105                               110                               115

aag aaa aac cct att ggt aaa tat atc cac cct atc gct cta act ttt      439
Lys Lys Asn Pro Ile Gly Lys Tyr Ile His Pro Ile Ala Leu Thr Phe
                120                               125                               130

ggc ttt tta atc gcc att tta gcc aaa acg atg tgg ttt gtt      481
Gly Phe Leu Ile Ala Ile Leu Ala Lys Thr Met Trp Phe Val
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taagagcggt tcaacctcaa agaatttaag accactaaga gtgagctagc gct      534
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<210> 218

<211> 145

<212> PRT

<213> *Helicobacter pylori*

<400> 218

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  20                               25                               30
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Val Lys Lys Met Phe Gly Glu Glu Phe Ala Asn Lys Ala Asn Thr Gly
35 40 45
Ile Thr Gln Arg Ala Ile Lys Ile Met Pro Leu Cys Val Leu Gly Leu
50 55 60
Val Leu Thr Gly Gly Met Met Leu Ser Gln Tyr Met Gly Gly Asp Lys
65 70 75 80
Gly Trp Cys Glu Thr Pro Phe Gln Lys Ile Leu Met Leu Lys Val Ile
85 90 95
Leu Ala Leu Ser Ile Phe Leu Leu Val Leu Phe Ser Leu Ser Cys Lys
100 105 110
Phe Leu Gly Lys Lys Asn Pro Ile Gly Lys Tyr Ile His Pro Ile Ala
115 120 125
Leu Thr Phe Gly Phe Leu Ile Ala Ile Leu Ala Lys Thr Met Trp Phe
130 135 140
Val
145

<210> 219
<211> 635
<212> DNA
<213> Helicobacter pylori

<220>
<221> CDS
<222> (48)...(584)

<400> 219
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Met Glu Lys
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Leu Phe Glu Lys Ile Leu His Glu Met Arg Ser Arg Thr Ser Phe Leu
5 10 15
ctt gct ttt gtc gtt tcg ctt att gtt ttt att ttt aat cta aaa ggg 152
Leu Ala Phe Val Val Ser Leu Ile Val Phe Ile Phe Asn Leu Lys Gly
20 25 30 35
gtt ttt caa ttg att ttt gag tct att ttc caa tac acc caa aac aaa 200
Val Phe Gln Leu Ile Phe Glu Ser Ile Phe Gln Tyr Thr Gln Asn Lys
40 45 50
atc ctt tct ttt tct ctt tct ttt ttc ttt att ttc ttt ttc ttt tac 248
Ile Leu Ser Phe Ser Leu Ser Phe Phe Phe Ile Phe Phe Phe Phe Tyr
55 60 65
gct att ttt ctt att ttt tat caa ata ttt ctt tgg tat ggg gct aaa 296
Ala Ile Phe Leu Ile Phe Tyr Gln Ile Phe Leu Trp Tyr Gly Ala Lys
70 75 80
aaa tat aaa caa aat caa aga gat agt gaa att gtc tat aac att caa 344
Lys Tyr Lys Gln Asn Gln Arg Asp Ser Glu Ile Val Tyr Asn Ile Gln
85 90 95

aaa ttc cca aat gag ata aaa gaa gaa ctt tat cgt tgc tat tct aaa	392
Lys Phe Pro Asn Glu Ile Lys Glu Glu Leu Tyr Arg Cys Tyr Ser Lys	
100 105 110 115	

aaa caa aat aaa att ctt aga acg aaa aaa ctt gat gat ttg ata gat	440
Lys Gln Asn Lys Ile Leu Arg Thr Lys Lys Leu Asp Asp Leu Ile Asp	
120 125 130	

tat ctt gat tta ata ggt ttt ttt aag tcg aga gat ttt ttt gaa ccg	488
Tyr Leu Asp Leu Ile Gly Phe Phe Lys Ser Arg Asp Phe Phe Glu Pro	
135 140 145	

aca aaa gac gat tat att gtc aaa ccg gat gtc tta agg gct ata aaa	536
Thr Lys Asp Asp Tyr Ile Val Lys Pro Asp Val Leu Arg Ala Ile Lys	
150 155 160	

aaa tac cat aaa att gct ttt aaa tct gta tat tgg caa cag aac aaa	584
Lys Tyr His Lys Ile Ala Phe Lys Ser Val Tyr Trp Gln Gln Asn Lys	
165 170 175	

taaaaagcgc ttgttctttg tctaagaaac accccccttt aaaaaagggg g	635
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<210> 220

<211> 179

<212> PRT

<213> Helicobacter pylori

<400> 220

Met Glu Lys Leu Phe Glu Lys Ile Leu His Glu Met Arg Ser Arg Thr	
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Ser Phe Leu Leu Ala Phe Val Val Ser Leu Ile Val Phe Ile Phe Asn	
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Gln Asn Lys Ile Leu Ser Phe Ser Leu Ser Phe Phe Phe Ile Phe Phe	
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Phe Phe Tyr Ala Ile Phe Leu Ile Phe Tyr Gln Ile Phe Leu Trp Tyr	
65 70 75 80	
Gly Ala Lys Lys Tyr Lys Gln Asn Gln Arg Asp Ser Glu Ile Val Tyr	
85 90 95	
Asn Ile Gln Lys Phe Pro Asn Glu Ile Lys Glu Glu Leu Tyr Arg Cys	
100 105 110	
Tyr Ser Lys Lys Gln Asn Lys Ile Leu Arg Thr Lys Lys Leu Asp Asp	
115 120 125	
Leu Ile Asp Tyr Leu Asp Leu Ile Gly Phe Phe Lys Ser Arg Asp Phe	
130 135 140	
Phe Glu Pro Thr Lys Asp Asp Tyr Ile Val Lys Pro Asp Val Leu Arg	
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Gln Asn Lys	

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<400> 223

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Glu Lys Ile Arg Lys Ile Leu Ala Asp Ile Glu Asp Ser Gln Asn Glu
      5                      10                      15

att gaa atg ctt tta aaa tta gcg aat ttg agt ttg ggg gat ttt att      152
Ile Glu Met Leu Leu Lys Leu Ala Asn Leu Ser Leu Gly Asp Phe Ile
      20                      25                      30

gag att aaa aga ggg agc atg gac atg cca aag ggc gtg aat gaa gcg      200
Glu Ile Lys Arg Gly Ser Met Asp Met Pro Lys Gly Val Asn Glu Ala
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ttt ttt acg caa tta agc gaa gaa gtg gag cga ttg aag gag ctt att      248
Phe Phe Thr Gln Leu Ser Glu Glu Val Glu Arg Leu Lys Glu Leu Ile
      55                      60                      65

aac gct ttg aat aaa atc aaa aaa ggg tta ttg gtg ttt taaatgtgtg      297
Asn Ala Leu Asn Lys Ile Lys Lys Gly Leu Leu Val Phe
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<211> 79

<212> PRT

<213> *Helicobacter pylori*

<400> 224

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Phe Ile Glu Ile Lys Arg Gly Ser Met Asp Met Pro Lys Gly Val Asn
      35                      40                      45
Glu Ala Phe Phe Thr Gln Leu Ser Glu Glu Val Glu Arg Leu Lys Glu
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Leu Ile Asn Ala Leu Asn Lys Ile Lys Lys Gly Leu Leu Val Phe
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<210> 225

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<213> *Helicobacter pylori*

<220>

<221> CDS

<222> (54)...(3050)

<400> 225

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Ile Gln Ser Ser Leu Tyr Arg Ala Leu Asn Lys Gly Phe Asp Tyr Gln
          5                      10                      15

ata ctc gct tgt aag gat ttt aaa gaa tcc gag ctc gct aaa gaa gtc 152
Ile Leu Ala Cys Lys Asp Phe Lys Glu Ser Glu Leu Ala Lys Glu Val
          20                      25                      30

ata agc tat ttt aag cca aat acc aaa gcc att ctt ttc ccg gag ttt 200
Ile Ser Tyr Phe Lys Pro Asn Thr Lys Ala Ile Leu Phe Pro Glu Phe
          35                      40                      45

agg gct aaa aaa aac gac gat ttg cgt tcg ttt ttt gaa gaa ttt tta 248
Arg Ala Lys Lys Asn Asp Asp Leu Arg Ser Phe Phe Glu Glu Phe Leu
          50                      55                      60                      65

cag ctt tta ggg ggt tta agg gag ttt tat caa gcc tta gaa aac aag 296
Gln Leu Leu Gly Gly Leu Arg Glu Phe Tyr Gln Ala Leu Glu Asn Lys
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caa gaa act atc atc att gcc ccg att agc gcg tta ttg cac cct tta 344
Gln Glu Thr Ile Ile Ile Ala Pro Ile Ser Ala Leu Leu His Pro Leu
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cct aaa aaa gaa ctt tta gaa agc ttt aaa atc act ctt tta gaa aaa 392
Pro Lys Lys Glu Leu Leu Glu Ser Phe Lys Ile Thr Leu Leu Glu Lys
          100                      105                      110

tat aac ctt aag gat ttg aaa gac aag ctc ttt tat tat ggc tat gaa 440
Tyr Asn Leu Lys Asp Leu Lys Asp Lys Leu Phe Tyr Tyr Gly Tyr Glu
          115                      120                      125

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Ile Leu Asp Leu Val Glu Val Glu Gly Glu Ala Ser Phe Arg Gly Asp
          130                      135                      140                      145

att gtg gat att tat gcg cca aat tct aaa gcg tat cgc ttg agt ttt 536
Ile Val Asp Ile Tyr Ala Pro Asn Ser Lys Ala Tyr Arg Leu Ser Phe
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ttt gac acc gag tgt gag agc att aag gaa ttt gat ccc att act caa 584
Phe Asp Thr Glu Cys Glu Ser Ile Lys Glu Phe Asp Pro Ile Thr Gln
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atg agc ctt aaa gaa gat ttg tta gaa att gaa atc ccc ccc acg ctt 632
Met Ser Leu Lys Glu Asp Leu Leu Glu Ile Glu Ile Pro Pro Thr Leu
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Trp Phe Leu Gly Glu Lys Ala Gln Asp Leu Leu Ile Val Tyr Lys Ser			
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aac gaa ttg gat tgt gag cgt ttc aaa ttt tta aag gtt tta gaa aac			872
Asn Glu Leu Asp Cys Glu Arg Phe Lys Phe Leu Lys Val Leu Glu Asn			
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gcg caa ggc tat gaa gat tta gaa atc cat gcg cat gcc cta gaa ggc			920
Ala Gln Gly Tyr Glu Asp Leu Glu Ile His Ala His Ala Leu Glu Gly			
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Lys Thr Ile Leu Asp Asn Ala Ile Ser Ala Leu Asp Ala Gly Asn Met			
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gaa tgc gtc atc gcc ccc ttt gtg tta aac ttt aaa acc cct gat ggg			1064
Glu Cys Val Ile Ala Pro Phe Val Leu Asn Phe Lys Thr Pro Asp Gly			
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Ile Phe Ile Ser Leu Asn Ser Phe Glu Arg Lys Lys Lys Arg Gln Lys			
	340	345	350
tcc aag ctc gct ttg aat gag ttg aat ccg ggc gaa tgg gtg gtg cat			1160
Ser Lys Leu Ala Leu Asn Glu Leu Asn Pro Gly Glu Trp Val Val His			
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gat gat tat ggg gtg ggc gtg ttt tct caa tta gtc cag cac agc gtt			1208
Asp Asp Tyr Gly Val Gly Val Phe Ser Gln Leu Val Gln His Ser Val			
	370	375	380
tta ggg agc aag agg gat ttt tta gaa atc gct tat ttg ggc gaa gac			1256
Leu Gly Ser Lys Arg Asp Phe Leu Glu Ile Ala Tyr Leu Gly Glu Asp			
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aaa ctg ctg tta ccg gta gaa aac ttg cat ctc atc gct cgc tat gtg			1304
Lys Leu Leu Leu Pro Val Glu Asn Leu His Leu Ile Ala Arg Tyr Val			
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gcg caa agc gat agc gtg cca gct aaa gac cgg cta ggg aaa ggg agc			1352

Ala	Gln	Ser	Asp	Ser	Val	Pro	Ala	Lys	Asp	Arg	Leu	Gly	Lys	Gly	Ser		
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ttt	ctt	aaa	tta	aaa	gct	aaa	gtc	agg	act	aag	ctt	tta	gag	att	gct	1400	
Phe	Leu	Lys	Leu	Lys	Ala	Lys	Val	Arg	Thr	Lys	Leu	Leu	Glu	Ile	Ala		
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Ser	Lys	Ile	Ile	Glu	Leu	Ala	Ala	Glu	Arg	Asn	Leu	Ile	Leu	Gly	Lys		
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Lys	Met	Asp	Val	His	Leu	Ala	Glu	Leu	Glu	Val	Phe	Lys	Ser	His	Ala		
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Gly	Phe	Glu	Tyr	Thr	Ser	Asp	Gln	Glu	Lys	Ala	Ile	Ala	Glu	Ile	Ser		
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Lys	Asp	Leu	Ser	Ser	His	Arg	Val	Met	Asp	Arg	Leu	Leu	Ser	Gly	Asp		
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Val	Gly	Phe	Gly	Lys	Thr	Glu	Val	Ala	Met	His	Ala	Ile	Phe	Cys	Ala		
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Phe	Leu	Asn	Gly	Phe	Gln	Ser	Ala	Leu	Val	Val	Pro	Thr	Thr	Leu	Leu		
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Ala	His	Gln	His	Phe	Glu	Thr	Leu	Arg	Ala	Arg	Phe	Glu	Asn	Phe	Gly		
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gtt	aaa	gtg	gct	cgt	ttg	gac	agg	tat	gcg	agc	gaa	aaa	aac	aag	ctt	1784	
Val	Lys	Val	Ala	Arg	Leu	Asp	Arg	Tyr	Ala	Ser	Glu	Lys	Asn	Lys	Leu		
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Leu	Lys	Ala	Val	Glu	Leu	Gly	Gln	Val	Asp	Ala	Leu	Ile	Gly	Thr	His		
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gcg	att	tta	ggc	gcg	aaa	ttc	aaa	aac	ctg	ggc	ttg	gtg	gtg	gtg	gat	1880	
Ala	Ile	Leu	Gly	Ala	Lys	Phe	Lys	Asn	Leu	Gly	Leu	Val	Val	Val	Asp		
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Glu	Glu	His	Lys	Phe	Gly	Val	Lys	Gln	Lys	Glu	Ala	Leu	Lys	Glu	Leu		
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Ser	Lys	Ser	Val	His	Phe	Leu	Ser	Met	Ser	Ala	Thr	Pro	Ile	Pro	Arg		
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Thr Pro Pro Thr Asp Arg Lys Pro Ser Arg Thr Phe Leu Lys Glu Lys	
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aat gac gaa ctc tta aaa gag att att tac aga gaa tta cgc cgt aac	2120
Asn Asp Glu Leu Leu Lys Glu Ile Ile Tyr Arg Glu Leu Arg Arg Asn	
675 680 685	
ggg caa att ttt tac atc cat aac cac atc gct agc att tta aaa gtc	2168
Gly Gln Ile Phe Tyr Ile His Asn His Ile Ala Ser Ile Leu Lys Val	
690 695 700 705	
aaa acc aag cta gaa gat tta atc cct aaa ctc aaa atc gct att ttg	2216
Lys Thr Lys Leu Glu Asp Leu Ile Pro Lys Leu Lys Ile Ala Ile Leu	
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cat tcc cag att aac gct aat gag agc gaa gaa atc atg cta gag ttt	2264
His Ser Gln Ile Asn Ala Asn Glu Ser Glu Glu Ile Met Leu Glu Phe	
725 730 735	
gcc aag gga aat tat cag gtt tta tta tgc act tct att gtg gaa tca	2312
Ala Lys Gly Asn Tyr Gln Val Leu Leu Cys Thr Ser Ile Val Glu Ser	
740 745 750	
ggg att cat ttg cct aac gct aac acg atc att ata gat aat gcg caa	2360
Gly Ile His Leu Pro Asn Ala Asn Thr Ile Ile Ile Asp Asn Ala Gln	
755 760 765	
aat ttc ggg ctg gct gat ttg cac caa ttg aga ggg cgt gtg ggg aga	2408
Asn Phe Gly Leu Ala Asp Leu His Gln Leu Arg Gly Arg Val Gly Arg	
770 775 780 785	
ggt aaa aaa gaa ggc ttt tgt tat ttc ctc ata gaa gat caa aaa agt	2456
Gly Lys Lys Glu Gly Phe Cys Tyr Phe Leu Ile Glu Asp Gln Lys Ser	
790 795 800	
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tat tta ggc agc ggg gag agt gtc gct tat cat gat tta gaa atc agg	2552
Tyr Leu Gly Ser Gly Glu Ser Val Ala Tyr His Asp Leu Glu Ile Arg	
820 825 830	
ggg ggc ggg aat ttg ctc ggg caa gat cag agc ggg cat att aaa aac	2600
Gly Gly Gly Asn Leu Leu Gly Gln Asp Gln Ser Gly His Ile Lys Asn	
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870 875 880	
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Gly Val Ser Ala Phe Leu Asn Pro Glu Leu Ile Ala Ser Asp Ser Leu	
885 890 895	
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Arg Leu Asp Leu Tyr Arg Arg Leu Ser Leu Cys Glu Asn Thr Asp Glu	
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915 920 925	
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Asp Leu Ser Ala Gln Phe Leu Gln Ile Ile Thr Leu Lys Ile Leu Ala	
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<212> PRT

<213> *Helicobacter pylori*

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Lys	Thr	Pro	Pro	Thr	Asp	Arg	Lys	Pro	Ser	Arg	Thr	Phe	Leu	Lys	Glu
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Lys	Asn	Asp	Glu	Leu	Leu	Lys	Glu	Ile	Ile	Tyr	Arg	Glu	Leu	Arg	Arg
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Phe	Ala	Lys	Gly	Asn	Tyr	Gln	Val	Leu	Cys	Thr	Ser	Ile	Val	Glu	
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785					790					795					800
Ser	Leu	Asn	Glu	Gln	Ala	Leu	Lys	Arg	Leu	Leu	Ala	Leu	Glu	Lys	Asn
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			900					905					910		
Glu	Val	Gly	Gln	Ile	His	Glu	Glu	Ile	Glu	Asp	Arg	Phe	Gly	Lys	Ile
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Asp	Asp	Leu	Ser	Ala	Gln	Phe	Leu	Gln	Ile	Ile	Thr	Leu	Lys	Ile	Leu
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Asp	Thr	Ser	Glu	Ser	Phe	His	Leu	Ser	Gly	Val	Ile	Ser	Leu	Val	Ser		
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Lys	His	Ser	Phe	Thr	Gln	Gln	Val	Leu	Glu	Lys	Phe	Lys	Ile	Gln	Val		
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Met	Arg	Pro	Tyr	Phe	Lys	Glu	Pro	Thr	Leu	Ile	His	His	Leu	His	Ala		
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tat	att	aaa	gaa	ctt	ccc	tta	cac	tat	tgc	gtt	ctg	cct	tat	tat	tat	681	
Tyr	Ile	Lys	Glu	Leu	Pro	Leu	His	Tyr	Cys	Val	Leu	Pro	Tyr	Tyr	Tyr		
			200					205					210				
caa	gaa	gaa	ctt	gat	gat	ttg	aga	cat	aaa	gct	tcc	tta	ccc	att	cgg	729	
Gln	Glu	Glu	Leu	Asp	Asp	Leu	Arg	His	Lys	Ala	Ser	Leu	Pro	Ile	Arg		
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Phe	Glu	Ile	Ile	His	Gln	Asp	Lys	Pro	Asn	Glu	Phe	Ile	His	Arg	Gln		
	230					235					240						
caa	atc	ccc	tat	gag	atc	tct	caa	att	caa	aac	att	ctt	tca	aac	cct	825	
Gln	Ile	Pro	Tyr	Glu	Ile	Ser	Gln	Ile	Gln	Asn	Ile	Leu	Ser	Asn	Pro		
	245				250					255					260		
att	atc	atg	cac	tat	gaa	tct	gat	aaa	gat	gct	ctt	gga	atc	tac	aat	873	
Ile	Ile	Met	His	Tyr	Glu	Ser	Asp	Lys	Asp	Ala	Leu	Gly	Ile	Tyr	Asn		
			265					270						275			
ggc	aaa	cct	tgg	gag	ttc	cct	ttg	ggg	aat	caa	tac	cac	ctg	tgg	tta	921	
Gly	Lys	Pro	Trp	Glu	Phe	Pro	Leu	Gly	Asn	Gln	Tyr	His	Leu	Trp	Leu		
		280						285					290				
gag	atg	ctt	gca	cac	act	cca	ttt	tgg	aaa	gac	ttc	act	ctg	gaa	atg	969	
Glu	Met	Leu	Ala	His	Thr	Pro	Phe	Trp	Lys	Asp	Phe	Thr	Leu	Glu	Met		
	295					300						305					
caa	aaa	aaa	cgc	ata	gaa	tac	cga	gat	att	gct	caa	aaa	atc	cat	tat	1017	
Gln	Lys	Lys	Arg	Ile	Glu	Tyr	Arg	Asp	Ile	Ala	Gln	Lys	Ile	His	Tyr		
	310					315					320						
ttt	tct	caa	gat	aag	cgt	ctt	tat	gaa	gtg	agc	ata	cgc	tcc	att	aag	1065	
Phe	Ser	Gln	Asp	Lys	Arg	Leu	Tyr	Glu	Val	Ser	Ile	Arg	Ser	Ile	Lys		
	325				330					335					340		
ggt	ttt	gca	tct	cat	tac	tat	aat	tta	gtg	ggt	aaa	gaa	cga	tgg	tct	1113	
Val	Phe	Ala	Ser	His	Tyr	Tyr	Asn	Leu	Val	Val	Lys	Glu	Arg	Trp	Ser		
				345					350						355		

aaa cca ata aaa act ttc ttt caa aaa aat ttt ttt caa aaa aag ttc 1161
 Lys Pro Ile Lys Thr Phe Phe Gln Lys Asn Phe Phe Gln Lys Lys Phe
 360 365 370

taatttggttg gaatcacaag gcgaaaccaa atccctaata cttatgcttt ctcagg 1217

<210> 228
 <211> 372
 <212> PRT
 <213> Helicobacter pylori

<400> 228
 Met Gln His Glu Ile Pro Ile Ala Phe Ala Phe Asp Lys Asn Tyr Leu
 1 5 10 15
 Lys Thr Gly Ala Val Ala Leu Tyr Ser Leu Leu His Ala His Arg Ala
 20 25 30
 Val Glu Gly Val Phe Phe Ser Ile Tyr Ile Phe Tyr Ser Gly Leu Asn
 35 40 45
 Glu Asp Asp Leu Asn Arg Leu Gln Glu Thr Ile Lys Pro Phe Lys His
 50 55 60
 Phe Ala Ala Leu Lys Cys Gln Asp Ile Ser Ala Thr Leu Asp Ser Leu
 65 70 75 80
 Pro Thr Ile Thr Asp Ser Ala Trp Val Asn Arg Tyr Ser Arg Met Ile
 85 90 95
 Leu Val Lys Tyr Leu Leu Pro Ser Leu Phe Pro Gln Tyr Ser Lys Met
 100 105 110
 Ile Trp Ser Asp Val Asp Val Val Phe Cys Arg Ala Phe Ala Asp Asp
 115 120 125
 Phe Ile Ala Leu Asp Thr Ser Glu Ser Phe His Leu Ser Gly Val Ile
 130 135 140
 Ser Leu Val Ser Gln Ser Val Thr Glu Gly Phe Trp Phe Cys Asn Leu
 145 150 155 160
 Asp Tyr Met Arg Lys His Ser Phe Thr Gln Gln Val Leu Glu Lys Phe
 165 170 175
 Lys Ile Gln Val Met Arg Pro Tyr Phe Lys Glu Pro Thr Leu Ile His
 180 185 190
 His Leu His Ala Tyr Ile Lys Glu Leu Pro Leu His Tyr Cys Val Leu
 195 200 205
 Pro Tyr Tyr Tyr Gln Glu Glu Leu Asp Asp Leu Arg His Lys Ala Ser
 210 215 220
 Leu Pro Ile Arg Phe Glu Ile Ile His Gln Asp Lys Pro Asn Glu Phe
 225 230 235 240
 Ile His Arg Gln Gln Ile Pro Tyr Glu Ile Ser Gln Ile Gln Asn Ile
 245 250 255
 Leu Ser Asn Pro Ile Ile Met His Tyr Glu Ser Asp Lys Asp Ala Leu
 260 265 270
 Gly Ile Tyr Asn Gly Lys Pro Trp Glu Phe Pro Leu Gly Asn Gln Tyr
 275 280 285
 His Leu Trp Leu Glu Met Leu Ala His Thr Pro Phe Trp Lys Asp Phe
 290 295 300
 Thr Leu Glu Met Gln Lys Lys Arg Ile Glu Tyr Arg Asp Ile Ala Gln
 305 310 315 320
 Lys Ile His Tyr Phe Ser Gln Asp Lys Arg Leu Tyr Glu Val Ser Ile
 325 330 335
 Arg Ser Ile Lys Val Phe Ala Ser His Tyr Tyr Asn Leu Val Val Lys

130	135	140	
ttt ttt gag ccg att gga gaa acc att aaa caa agg aaa agt cat gaa	723		
Phe Phe Glu Pro Ile Gly Glu Thr Ile Lys Gln Arg Lys Ser His Glu			
145 150 155			

aac ttc taaaacaaaa acccctaaat ccgttttaat cgctggggcca tgcgtcattg	779
Asn Phe	
160	

a	780
---	-----

<210> 230
 <211> 160
 <212> PRT
 <213> Helicobacter pylori

<400> 230
 Met Gly Asn Val Asn Pro Pro Lys Thr Ser Tyr Lys Glu Ser Leu Ser
 1 5 10 15
 Thr Ile Ala Ser Ile Glu Tyr Ala Ile Ala His Val Gly Val Gln Asn
 20 25 30
 Leu Ile Ile Cys Gly His Ser Asp Cys Gly Ala Cys Gly Ser Val His
 35 40 45
 Leu Ile His Asp Glu Thr Thr Lys Ala Lys Thr Pro Tyr Ile Ala Asn
 50 55 60
 Trp Ile Gln Phe Leu Glu Pro Val Lys Glu Glu Leu Lys Asn His Pro
 65 70 75 80
 Gln Phe Ser Asn His Phe Ala Lys Arg Ser Trp Leu Thr Glu Arg Leu
 85 90 95
 Asn Ala Arg Leu Gln Leu Asn Asn Leu Leu Ser Tyr Asp Phe Ile Gln
 100 105 110
 Glu Lys Ala Ser Lys Asn Glu Leu Lys Ile Phe Gly Trp His Tyr Ile
 115 120 125
 Ile Glu Thr Gly Arg Ile Tyr Asn Tyr Asn Phe Glu Ser His Phe Phe
 130 135 140
 Glu Pro Ile Gly Glu Thr Ile Lys Gln Arg Lys Ser His Glu Asn Phe
 145 150 155 160

<210> 231
 <211> 450
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (107)...(385)

<400> 231
 taaagataaa aaccacccct ttgaccccc ttttagagga tttttatggt ttttttgaga 60
 taataaagac ttataaagtt aattaaaatt aaacagaagg gttttg atg tcc gct 115
 Met Ser Ala
 1

cat ttt tta aaa atc gtt ttt tta gta ggc atg tgc gtt tca agt ttg 163
His Phe Leu Lys Ile Val Phe Leu Val Gly Met Cys Val Ser Ser Leu
5 10 15

ttc gct gaa ggt tta gag ggg ttt ttt aac gcc cta gaa gcc cag ctc 211
Phe Ala Glu Gly Leu Glu Gly Phe Phe Asn Ala Leu Glu Ala Gln Leu
20 25 30 35

aaa agc ccc atc gct aag ggg att tta atg gtg att ttc ata ggg atc 259
Lys Ser Pro Ile Ala Lys Gly Ile Leu Met Val Ile Phe Ile Gly Ile
40 45 50

gct att tat gtg tgg agg aat ttg gac cgg tgg aaa gag atc tta ttc 307
Ala Ile Tyr Val Trp Arg Asn Leu Asp Arg Trp Lys Glu Ile Leu Phe
55 60 65

acg atc ctt ggc gtg gtg ttt ggg att ttt tta ttc ttt aaa gct ccg 355
Thr Ile Leu Gly Val Val Phe Gly Ile Phe Leu Phe Phe Lys Ala Pro
70 75 80

agt tta gcg aat tgg ttt atg gga att ttt taatgattat cctgtcagcg 405
Ser Leu Ala Asn Trp Phe Met Gly Ile Phe
85 90

agcgtgaaga atttgcgtga aatttcgggtt aaagaaaaat tttta 450

<210> 232

<211> 93

<212> PRT

<213> Helicobacter pylori

<400> 232

Met Ser Ala His Phe Leu Lys Ile Val Phe Leu Val Gly Met Cys Val
1 5 10 15
Ser Ser Leu Phe Ala Glu Gly Leu Glu Gly Phe Phe Asn Ala Leu Glu
20 25 30
Ala Gln Leu Lys Ser Pro Ile Ala Lys Gly Ile Leu Met Val Ile Phe
35 40 45
Ile Gly Ile Ala Ile Tyr Val Trp Arg Asn Leu Asp Arg Trp Lys Glu
50 55 60
Ile Leu Phe Thr Ile Leu Gly Val Val Phe Gly Ile Phe Leu Phe Phe
65 70 75 80
Lys Ala Pro Ser Leu Ala Asn Trp Phe Met Gly Ile Phe
85 90

<210> 233

<211> 1349

<212> DNA

<213> Helicobacter pylori

<220>

<221> CDS

<222> (77)...(1291)

<400> 233

tgaaggccga tgatttcatt tccaagtcta accccaaaga catccagcga gtgggttaagc 60
aatttttgga attagc atg aaa aaa tac agc act atc ccc acc cct tgc tac 112

Met Lys Lys Tyr Ser Thr Ile Pro Thr Pro Cys Tyr
1 5 10

gtg tta gag agc gaa cgc tta gaa aaa aac gcc aag att tta gaa atc 160
Val Leu Glu Ser Glu Arg Leu Glu Lys Asn Ala Lys Ile Leu Glu Ile
15 20 25

gtg cgc caa caa agt ggg gca aag gtc ttg ctt gct tta aag ggg tat 208
Val Arg Gln Gln Ser Gly Ala Lys Val Leu Leu Ala Leu Lys Gly Tyr
30 35 40

gcg ttt tgg cgt gag ttt ggg att ttg agg caa aaa ttg aac ggg tgt 256
Ala Phe Trp Arg Glu Phe Gly Ile Leu Arg Gln Lys Leu Asn Gly Cys
45 50 55 60

tgc gcg agc ggt ctt tat gag gct aag ctc gct ttt gaa gaa ttt ggg 304
Cys Ala Ser Gly Leu Tyr Glu Ala Lys Leu Ala Phe Glu Glu Phe Gly
65 70 75

ggg cga gag agc cac aaa gaa att tgc gtt tat agc ccg gct ttc aaa 352
Gly Arg Glu Ser His Lys Glu Ile Cys Val Tyr Ser Pro Ala Phe Lys
80 85 90

gag gct gaa atg agc gcg att tta ccc cta gcg aca agc att att ttt 400
Glu Ala Glu Met Ser Ala Ile Leu Pro Leu Ala Thr Ser Ile Ile Phe
95 100 105

aac tct ttt tac caa tac gct acc tat aaa gac agg att tta gat aaa 448
Asn Ser Phe Tyr Gln Tyr Ala Thr Tyr Lys Asp Arg Ile Leu Asp Lys
110 115 120

aac aag caa tta gaa aac ttg ggc tta agc ccc att aaa atg ggt ttg 496
Asn Lys Gln Leu Glu Asn Leu Gly Leu Ser Pro Ile Lys Met Gly Leu
125 130 135 140

agg ata aac cct ctc tat agc gaa gta acc cca gcg atc tat aac cca 544
Arg Ile Asn Pro Leu Tyr Ser Glu Val Thr Pro Ala Ile Tyr Asn Pro
145 150 155

tgc tct aaa gtg agc cgg tta ggg att acg cct agc gga ttt gaa aag 592
Cys Ser Lys Val Ser Arg Leu Gly Ile Thr Pro Ser Gly Phe Glu Lys
160 165 170

ggg gtg aaa gag cat ggc tta gag ggg gtg agc ggg ttg cat ttc cat 640
Gly Val Lys Glu His Gly Leu Glu Gly Val Ser Gly Leu His Phe His
175 180 185

acg cat tgc gag caa aac gct gac gct ttg tgc cgg act tta gag cat 688
Thr His Cys Glu Gln Asn Ala Asp Ala Leu Cys Arg Thr Leu Glu His
190 195 200

gta gaa aag cat ttc agg ccc tat tta gaa aac atg gcg tgg gtg aat 736

Val Glu Lys His Phe Arg Pro Tyr Leu Glu Asn Met Ala Trp Val Asn	
205 210 215 220	
ttt ggt ggg ggg cat cat atc act aag agc gat tat gat gtg aat ttg	784
Phe Gly Gly Gly His His Ile Thr Lys Ser Asp Tyr Asp Val Asn Leu	
225 230 235	
ctc atc caa acg att aag gat ttc aaa gaa cgc tat cat aat ata gaa	832
Leu Ile Gln Thr Ile Lys Asp Phe Lys Glu Arg Tyr His Asn Ile Glu	
240 245 250	
gtg att tta gag cct ggg gaa gcc ata ggg tgg caa tgc ggg ttt tta	880
Val Ile Leu Glu Pro Gly Glu Ala Ile Gly Trp Gln Cys Gly Phe Leu	
255 260 265	
atc gca agc gtg ata gac atc gtt caa aac gat caa gaa att gcg att	928
Ile Ala Ser Val Ile Asp Ile Val Gln Asn Asp Gln Glu Ile Ala Ile	
270 275 280	
cta gac gct tct ttt agc gct cac atg ccc gat tgc tta gaa atg cct	976
Leu Asp Ala Ser Phe Ser Ala His Met Pro Asp Cys Leu Glu Met Pro	
285 290 295 300	
tat cgc cct agc att ttt aaa gtc tcc gta gaa aat gat gaa gag ctt	1024
Tyr Arg Pro Ser Ile Phe Lys Val Ser Val Glu Asn Asp Glu Glu Leu	
305 310 315	
att gaa gtt gaa aag ggc gaa aat caa ggg gcg ttt tct tat ttt tta	1072
Ile Glu Val Glu Lys Gly Glu Asn Gln Gly Ala Phe Ser Tyr Phe Leu	
320 325 330	
ggc ggc cct act tgt tta gcg ggg gat ttt atg ggg agt ttt agc ttt	1120
Gly Gly Pro Thr Cys Leu Ala Gly Asp Phe Met Gly Ser Phe Ser Phe	
335 340 345	
gaa acg cct tta aaa agg ggc gat aaa atc gtg ttt caa gac atg ctc	1168
Glu Thr Pro Leu Lys Arg Gly Asp Lys Ile Val Phe Gln Asp Met Leu	
350 355 360	
cat tat acg att gtc aaa aac aac tcg ttt aat ggc gtg ccg ctc cca	1216
His Tyr Thr Ile Val Lys Asn Asn Ser Phe Asn Gly Val Pro Leu Pro	
365 370 375 380	
agc ctg gct aga ttg gat caa caa ggg ttt aaa atc ctt aaa aac ttt	1264
Ser Leu Ala Arg Leu Asp Gln Gln Gly Phe Lys Ile Leu Lys Asn Phe	
385 390 395	
tct tat gaa gac tat aaa aac aga aac taaagctttt gattaaggct	1311
Ser Tyr Glu Asp Tyr Lys Asn Arg Asn	
400 405	
ttttggggct tgtaaaaagt tacgcacaac attccaac	1349
<210> 234	
<211> 405	

<212> PRT

<213> Helicobacter pylori

<400> 234

Met	Lys	Lys	Tyr	Ser	Thr	Ile	Pro	Thr	Pro	Cys	Tyr	Val	Leu	Glu	Ser
1				5					10					15	
Glu	Arg	Leu	Glu	Lys	Asn	Ala	Lys	Ile	Leu	Glu	Ile	Val	Arg	Gln	Gln
		20						25					30		
Ser	Gly	Ala	Lys	Val	Leu	Leu	Ala	Leu	Lys	Gly	Tyr	Ala	Phe	Trp	Arg
		35					40					45			
Glu	Phe	Gly	Ile	Leu	Arg	Gln	Lys	Leu	Asn	Gly	Cys	Cys	Ala	Ser	Gly
	50					55					60				
Leu	Tyr	Glu	Ala	Lys	Leu	Ala	Phe	Glu	Glu	Phe	Gly	Gly	Arg	Glu	Ser
65					70					75				80	
His	Lys	Glu	Ile	Cys	Val	Tyr	Ser	Pro	Ala	Phe	Lys	Glu	Ala	Glu	Met
				85					90					95	
Ser	Ala	Ile	Leu	Pro	Leu	Ala	Thr	Ser	Ile	Ile	Phe	Asn	Ser	Phe	Tyr
			100					105					110		
Gln	Tyr	Ala	Thr	Tyr	Lys	Asp	Arg	Ile	Leu	Asp	Lys	Asn	Lys	Gln	Leu
		115					120					125			
Glu	Asn	Leu	Gly	Leu	Ser	Pro	Ile	Lys	Met	Gly	Leu	Arg	Ile	Asn	Pro
	130					135					140				
Leu	Tyr	Ser	Glu	Val	Thr	Pro	Ala	Ile	Tyr	Asn	Pro	Cys	Ser	Lys	Val
145					150					155				160	
Ser	Arg	Leu	Gly	Ile	Thr	Pro	Ser	Gly	Phe	Glu	Lys	Gly	Val	Lys	Glu
			165						170					175	
His	Gly	Leu	Glu	Gly	Val	Ser	Gly	Leu	His	Phe	His	Thr	His	Cys	Glu
		180						185					190		
Gln	Asn	Ala	Asp	Ala	Leu	Cys	Arg	Thr	Leu	Glu	His	Val	Glu	Lys	His
	195						200					205			
Phe	Arg	Pro	Tyr	Leu	Glu	Asn	Met	Ala	Trp	Val	Asn	Phe	Gly	Gly	Gly
	210					215					220				
His	His	Ile	Thr	Lys	Ser	Asp	Tyr	Asp	Val	Asn	Leu	Leu	Ile	Gln	Thr
225					230					235				240	
Ile	Lys	Asp	Phe	Lys	Glu	Arg	Tyr	His	Asn	Ile	Glu	Val	Ile	Leu	Glu
			245						250					255	
Pro	Gly	Glu	Ala	Ile	Gly	Trp	Gln	Cys	Gly	Phe	Leu	Ile	Ala	Ser	Val
		260					265						270		
Ile	Asp	Ile	Val	Gln	Asn	Asp	Gln	Glu	Ile	Ala	Ile	Leu	Asp	Ala	Ser
	275					280						285			
Phe	Ser	Ala	His	Met	Pro	Asp	Cys	Leu	Glu	Met	Pro	Tyr	Arg	Pro	Ser
	290					295					300				
Ile	Phe	Lys	Val	Ser	Val	Glu	Asn	Asp	Glu	Glu	Leu	Ile	Glu	Val	Glu
305					310					315				320	
Lys	Gly	Glu	Asn	Gln	Gly	Ala	Phe	Ser	Tyr	Phe	Leu	Gly	Gly	Pro	Thr
			325						330					335	
Cys	Leu	Ala	Gly	Asp	Phe	Met	Gly	Ser	Phe	Ser	Phe	Glu	Thr	Pro	Leu
		340					345						350		
Lys	Arg	Gly	Asp	Lys	Ile	Val	Phe	Gln	Asp	Met	Leu	His	Tyr	Thr	Ile
		355					360					365			
Val	Lys	Asn	Asn	Ser	Phe	Asn	Gly	Val	Pro	Leu	Pro	Ser	Leu	Ala	Arg
	370					375					380				
Leu	Asp	Gln	Gln	Gly	Phe	Lys	Ile	Leu	Lys	Asn	Phe	Ser	Tyr	Glu	Asp
385					390					395				400	
Tyr	Lys	Asn	Arg	Asn											

<210> 235
 <211> 609
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (246)...(548)

<400> 235
 gaatcttttac tttataatatt gcctgacctt ttaaaagaac actctaataa aaatgtcttg 60
 ctcattcttac acttgcaggc tcgcatggcc caaactacga caacaaagtg ccttttaaatt 120
 ttaggggtgtt taagccttat tgctcaagcg ctgatctgtc ttcttgctcc aaagaaagcc 180
 tgattaacgc ctatgacaac accatttttt acaacgacta tctgctagat cgaaagatca 240
 ttagc atg ctt gaa aac gcc aag cag ccc gcc tta atg atc tat tta agc 290
 Met Leu Glu Asn Ala Lys Gln Pro Ala Leu Met Ile Tyr Leu Ser
 1 5 10 15
 gat cat ggc gaa agt ttg ggc gaa gaa gcg ttc tat ttg cat ggc att 338
 Asp His Gly Glu Ser Leu Gly Glu Glu Ala Phe Tyr Leu His Gly Ile
 20 25 30
 cct aaa agc atc gcc ccc aaa gaa caa tac gag atc ccc ttt atc gtt 386
 Pro Lys Ser Ile Ala Pro Lys Glu Gln Tyr Glu Ile Pro Phe Ile Val
 35 40 45
 tat gct aat gag cct ttc aaa gaa aag cat tcc atc att caa acc caa 434
 Tyr Ala Asn Glu Pro Phe Lys Glu Lys His Ser Ile Ile Gln Thr Gln
 50 55 60
 acc ccc att aat caa aat gtg att ttc cat agc gtt tta ggg gtg ttt 482
 Thr Pro Ile Asn Gln Asn Val Ile Phe His Ser Val Leu Gly Val Phe
 65 70 75
 ttg gat ttt aaa aac cca agc gtt gtt tat cgc cct tct tta gat ctg 530
 Leu Asp Phe Lys Asn Pro Ser Val Val Tyr Arg Pro Ser Leu Asp Leu
 80 85 90 95
 ctt aaa cac aaa aaa gag taaaataaca cgcatgaaaa aattcttatt 578
 Leu Lys His Lys Lys Glu
 100
 taaacaaaaa ttttgtgaaa gcctgcccaa a 609

<210> 236
 <211> 101
 <212> PRT
 <213> Helicobacter pylori

<400> 236
 Met Leu Glu Asn Ala Lys Gln Pro Ala Leu Met Ile Tyr Leu Ser Asp
 1 5 10 15

His	Gly	Glu	Ser	Leu	Gly	Glu	Glu	Ala	Phe	Tyr	Leu	His	Gly	Ile	Pro
			20					25					30		
Lys	Ser	Ile	Ala	Pro	Lys	Glu	Gln	Tyr	Glu	Ile	Pro	Phe	Ile	Val	Tyr
		35					40					45			
Ala	Asn	Glu	Pro	Phe	Lys	Glu	Lys	His	Ser	Ile	Ile	Gln	Thr	Gln	Thr
		50				55					60				
Pro	Ile	Asn	Gln	Asn	Val	Ile	Phe	His	Ser	Val	Leu	Gly	Val	Phe	Leu
65					70					75					80
Asp	Phe	Lys	Asn	Pro	Ser	Val	Val	Tyr	Arg	Pro	Ser	Leu	Asp	Leu	Leu
			85						90					95	
Lys	His	Lys	Lys	Glu											
			100												

<210> 237
 <211> 872
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (123)...(818)

<400> 237
 agtttttagcg ataattatat ctttttatggc aataaaacga gcgtttgtaa gcaaatacggt 60
 aacgctgtgc ctctctttct agccctagcc ttaggcaaag cgatcttaaa aagcttaaga 120
 aa atg ata caa att tat cac gct gac gct ttt gaa atc atc aaa gac 167
 Met Ile Gln Ile Tyr His Ala Asp Ala Phe Glu Ile Ile Lys Asp
 1 5 10 15
 ttt tac cag caa aat tta aaa gtg gat gcg atc atc acg gac cct cct 215
 Phe Tyr Gln Gln Asn Leu Lys Val Asp Ala Ile Ile Thr Asp Pro Pro
 20 25 30
 tat aac att tcg gtt aaa aac aat ttt ccc acc cta aag agc gct aaa 263
 Tyr Asn Ile Ser Val Lys Asn Asn Phe Pro Thr Leu Lys Ser Ala Lys
 35 40 45
 agg caa ggc ata gat ttt ggg gaa tgg gat aaa aat ttc aag ctt tta 311
 Arg Gln Gly Ile Asp Phe Gly Glu Trp Asp Lys Asn Phe Lys Leu Leu
 50 55 60
 gaa tgg atc gca cgc tac gcc ccc tta gtc aat cca aac ggc tgc atg 359
 Glu Trp Ile Ala Arg Tyr Ala Pro Leu Val Asn Pro Asn Gly Cys Met
 65 70 75
 gtt att ttt tgc tct tac agg ttt ata agc tat atc gct gat ttt tta 407
 Val Ile Phe Cys Ser Tyr Arg Phe Ile Ser Tyr Ile Ala Asp Phe Leu
 80 85 90 95
 gaa gaa aac ggc ttt gtg gtc aaa gac ttt atc caa tgg gtt aaa aat 455
 Glu Glu Asn Gly Phe Val Val Lys Asp Phe Ile Gln Trp Val Lys Asn
 100 105 110
 aat ccc atg cca aga aac att cac cgg cgt tat gtc caa gac acg gaa 503

Asn	Pro	Met	Pro	Arg	Asn	Ile	His	Arg	Arg	Tyr	Val	Gln	Asp	Thr	Glu		
			115					120					125				
ttt	gct	ctg	tgg	gcg	gtt	aaa	aag	aaa	gcc	aag	tgg	gtg	ttt	aac	aaa	551	
Phe	Ala	Leu	Trp	Ala	Val	Lys	Lys	Lys	Ala	Lys	Trp	Val	Phe	Asn	Lys		
		130				135					140						
ccc	aaa	aat	gaa	aaa	tat	tta	cgg	cct	ttg	att	tta	aaa	agc	cct	gtg	599	
Pro	Lys	Asn	Glu	Lys	Tyr	Leu	Arg	Pro	Leu	Ile	Leu	Lys	Ser	Pro	Val		
	145					150				155							
gta	agc	ggg	ctt	gaa	aaa	acc	aaa	cac	ccc	acg	caa	aaa	agc	ctg	gcc	647	
Val	Ser	Gly	Leu	Glu	Lys	Thr	Lys	His	Pro	Thr	Gln	Lys	Ser	Leu	Ala		
160				165					170						175		
tta	atg	gaa	aaa	atc	att	tcc	atc	cac	aca	aac	cct	aat	gac	atc	gtg	695	
Leu	Met	Glu	Lys	Ile	Ile	Ser	Ile	His	Thr	Asn	Pro	Asn	Asp	Ile	Val		
			180					185						190			
cta	gat	cct	ttc	atg	ggg	agc	ggc	acc	acc	ggc	tta	gcg	tgc	aaa	aat	743	
Leu	Asp	Pro	Phe	Met	Gly	Ser	Gly	Thr	Thr	Gly	Leu	Ala	Cys	Lys	Asn		
		195					200						205				
tta	gaa	cgg	aat	ttt	atc	ggc	ata	gaa	tca	gaa	aaa	gaa	tat	ttt	caa	791	
Leu	Glu	Arg	Asn	Phe	Ile	Gly	Ile	Glu	Ser	Glu	Lys	Glu	Tyr	Phe	Gln		
	210					215					220						
acc	gct	aaa	aag	cgt	ttg	aat	ctg	ttt	taaaaacgct	atttgaatga						838	
Thr	Ala	Lys	Lys	Arg	Leu	Asn	Leu	Phe									
	225				230												
gattgtgtta tagttattta aaaggatatt ttga																872	
<210> 238																	
<211> 232																	
<212> PRT																	
<213> Helicobacter pylori																	
<400> 238																	
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1			5					10					15				
Tyr	Gln	Gln	Asn	Leu	Lys	Val	Asp	Ala	Ile	Ile	Thr	Asp	Pro	Pro	Tyr		
		20					25					30					
Asn	Ile	Ser	Val	Lys	Asn	Asn	Phe	Pro	Thr	Leu	Lys	Ser	Ala	Lys	Arg		
	35					40					45						
Gln	Gly	Ile	Asp	Phe	Gly	Glu	Trp	Asp	Lys	Asn	Phe	Lys	Leu	Leu	Glu		
	50				55					60							
Trp	Ile	Ala	Arg	Tyr	Ala	Pro	Leu	Val	Asn	Pro	Asn	Gly	Cys	Met	Val		
65				70				75						80			
Ile	Phe	Cys	Ser	Tyr	Arg	Phe	Ile	Ser	Tyr	Ile	Ala	Asp	Phe	Leu	Glu		
		85				90						95					
Glu	Asn	Gly	Phe	Val	Val	Lys	Asp	Phe	Ile	Gln	Trp	Val	Lys	Asn	Asn		
	100					105						110					
Pro	Met	Pro	Arg	Asn	Ile	His	Arg	Arg	Tyr	Val	Gln	Asp	Thr	Glu	Phe		
	115					120						125					

Ala	Leu	Trp	Ala	Val	Lys	Lys	Lys	Ala	Lys	Trp	Val	Phe	Asn	Lys	Pro
130						135					140				
Lys	Asn	Glu	Lys	Tyr	Leu	Arg	Pro	Leu	Ile	Leu	Lys	Ser	Pro	Val	Val
145					150					155					160
Ser	Gly	Leu	Glu	Lys	Thr	Lys	His	Pro	Thr	Gln	Lys	Ser	Leu	Ala	Leu
				165					170					175	
Met	Glu	Lys	Ile	Ile	Ser	Ile	His	Thr	Asn	Pro	Asn	Asp	Ile	Val	Leu
			180					185					190		
Asp	Pro	Phe	Met	Gly	Ser	Gly	Thr	Thr	Gly	Leu	Ala	Cys	Lys	Asn	Leu
	195						200					205			
Glu	Arg	Asn	Phe	Ile	Gly	Ile	Glu	Ser	Glu	Lys	Glu	Tyr	Phe	Gln	Thr
210						215					220				
Ala	Lys	Lys	Arg	Leu	Asn	Leu	Phe								
225					230										

<210> 239

<211> 1181

<212> DNA

<213> Helicobacter pylori

<220>

<221> CDS

<222> (60)...(1124)

<400> 239

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atg	aat	tat	aaa	att	tta	gat	tta	ttt	tgt	ggg	gct	107
Met	Asn	Tyr	Lys	Ile	Leu	Asp	Leu	Phe	Cys	Gly	Ala	
1			5				10				15	
gct	ggg	tta	gag	tgt	tta	gaa	gag	ttt	gac	gct	tta	155
Ala	Gly	Leu	Glu	Cys	Leu	Glu	Glu	Phe	Asp	Ala	Leu	
			20				25				30	
tgc	gat	aaa	caa	gcc	cta	atc	act	ttt	gaa	aac	aac	203
Cys	Asp	Lys	Gln	Ala	Leu	Ile	Thr	Phe	Glu	Asn	Asn	
		35				40				45		
ata	ggc	ggt	tgt	ggg	gac	atc	act	caa	acc	gaa	att	251
Ile	Gly	Val	Cys	Gly	Asp	Ile	Thr	Gln	Thr	Glu	Ile	
	50					55				60		
atc	aaa	cta	gct	aaa	aaa	tta	gaa	atc	aac	atg	atc	299
Ile	Lys	Leu	Ala	Lys	Lys	Leu	Glu	Ile	Asn	Met	Ile	
	65				70				75		80	
cca	tgt	caa	ggc	ttt	tct	aat	aaa	ggg	aaa	aat	tta	347
Pro	Cys	Gln	Gly	Phe	Ser	Asn	Lys	Gly	Lys	Asn	Leu	
			85					90			95	
cct	agg	aat	ttt	tta	ttc	tta	gaa	tat	ata	gaa	ata	395
Pro	Arg	Asn	Phe	Leu	Phe	Leu	Glu	Tyr	Ile	Glu	Ile	
		100					105				110	

aag cca gaa att ttt atc att gaa aac gtg aaa aac ctc atc tct tgc	443
Lys Pro Glu Ile Phe Ile Ile Glu Asn Val Lys Asn Leu Ile Ser Cys	
115 120 125	
gct aaa ggc tat ttt tta gaa gaa att aaa gaa agg ttg aac gct tta	491
Ala Lys Gly Tyr Phe Leu Glu Glu Ile Lys Glu Arg Leu Asn Ala Leu	
130 135 140	
ggg tat caa ttg agc tat caa atc cta aac gct aaa gat tat ggc gtg	539
Gly Tyr Gln Leu Ser Tyr Gln Ile Leu Asn Ala Lys Asp Tyr Gly Val	
145 150 155 160	
cct caa aac aga gag aga gcc ttt att gta ggg gct agt cgt ttc agt	587
Pro Gln Asn Arg Glu Arg Ala Phe Ile Val Gly Ala Ser Arg Phe Ser	
165 170 175	
ttt gat ttc aat ctt tta gag cct tct caa agc gtg aat gtt caa gat	635
Phe Asp Phe Asn Leu Leu Glu Pro Ser Gln Ser Val Asn Val Gln Asp	
180 185 190	
gcc ata agc gat tta gcc tat ctt tgt tct aat gag ggg gcg ttt gag	683
Ala Ile Ser Asp Leu Ala Tyr Leu Cys Ser Asn Glu Gly Ala Phe Glu	
195 200 205	
agc gat tat tta aac cct atc caa tca agc tat caa gct tta atg cga	731
Ser Asp Tyr Leu Asn Pro Ile Gln Ser Ser Tyr Gln Ala Leu Met Arg	
210 215 220	
aaa gat agc cct aaa tta tac aac cat caa gcc acc aac cac tcg caa	779
Lys Asp Ser Pro Lys Leu Tyr Asn His Gln Ala Thr Asn His Ser Gln	
225 230 235 240	
gcc gct tta gag aaa tta aaa ctc att aac aaa gaa caa ggc aaa gaa	827
Ala Ala Leu Glu Lys Leu Lys Leu Ile Asn Lys Glu Gln Gly Lys Glu	
245 250 255	
tgc ttg cct aaa aac ttg cat ggc aaa cag caa ttc aaa agc aca tgg	875
Cys Leu Pro Lys Asn Leu His Gly Lys Gln Gln Phe Lys Ser Thr Trp	
260 265 270	
ggg cgc ctg aat tgg aat aaa atc agc ccc acc ata gac aca cga ttt	923
Gly Arg Leu Asn Trp Asn Lys Ile Ser Pro Thr Ile Asp Thr Arg Phe	
275 280 285	
gac act ccc agc aat ggc acc aac tcc cac ccc gaa ttg cac cgc tct	971
Asp Thr Pro Ser Asn Gly Thr Asn Ser His Pro Glu Leu His Arg Ser	
290 295 300	
atc acg cct aga gaa gcc gct agg ata caa agt ttt agc gat aat tat	1019
Ile Thr Pro Arg Glu Ala Ala Arg Ile Gln Ser Phe Ser Asp Asn Tyr	
305 310 315 320	
atc ttt tat ggc aat aaa acg agc gtt tgt aag caa atc ggt aac gct	1067
Ile Phe Tyr Gly Asn Lys Thr Ser Val Cys Lys Gln Ile Gly Asn Ala	
325 330 335	

gtg cct cct ctt cta gcc cta gcc tta ggc aaa gcg atc tta aaa agc 1115
 Val Pro Pro Leu Leu Ala Leu Ala Leu Gly Lys Ala Ile Leu Lys Ser
 340 345 350

tta aga aaa tgatacaaat ttatcacgct gacgcttttg aaatcatcaa 1164
 Leu Arg Lys
 355

agactttttac cagcaaa 1181

<210> 240
 <211> 355
 <212> PRT
 <213> Helicobacter pylori

<400> 240
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 Ala Gly Leu Glu Cys Leu Glu Glu Phe Asp Ala Leu Ile Gly Leu Asp
 20 25 30
 Cys Asp Lys Gln Ala Leu Ile Thr Phe Glu Asn Asn His Lys Asn Ala
 35 40 45
 Ile Gly Val Cys Gly Asp Ile Thr Gln Thr Glu Ile Lys Glu Lys Val
 50 55 60
 Ile Lys Leu Ala Lys Lys Leu Glu Ile Asn Met Ile Ile Gly Gly Pro
 65 70 75 80
 Pro Cys Gln Gly Phe Ser Asn Lys Gly Lys Asn Leu Gly Leu Lys Asp
 85 90 95
 Pro Arg Asn Phe Leu Phe Leu Glu Tyr Ile Glu Ile Val Lys Ala Ile
 100 105 110
 Lys Pro Glu Ile Phe Ile Ile Glu Asn Val Lys Asn Leu Ile Ser Cys
 115 120 125
 Ala Lys Gly Tyr Phe Leu Glu Glu Ile Lys Glu Arg Leu Asn Ala Leu
 130 135 140
 Gly Tyr Gln Leu Ser Tyr Gln Ile Leu Asn Ala Lys Asp Tyr Gly Val
 145 150 155 160
 Pro Gln Asn Arg Glu Arg Ala Phe Ile Val Gly Ala Ser Arg Phe Ser
 165 170 175
 Phe Asp Phe Asn Leu Leu Glu Pro Ser Gln Ser Val Asn Val Gln Asp
 180 185 190
 Ala Ile Ser Asp Leu Ala Tyr Leu Cys Ser Asn Glu Gly Ala Phe Glu
 195 200 205
 Ser Asp Tyr Leu Asn Pro Ile Gln Ser Ser Tyr Gln Ala Leu Met Arg
 210 215 220
 Lys Asp Ser Pro Lys Leu Tyr Asn His Gln Ala Thr Asn His Ser Gln
 225 230 235 240
 Ala Ala Leu Glu Lys Leu Lys Leu Ile Asn Lys Glu Gln Gly Lys Glu
 245 250 255
 Cys Leu Pro Lys Asn Leu His Gly Lys Gln Gln Phe Lys Ser Thr Trp
 260 265 270
 Gly Arg Leu Asn Trp Asn Lys Ile Ser Pro Thr Ile Asp Thr Arg Phe
 275 280 285
 Asp Thr Pro Ser Asn Gly Thr Asn Ser His Pro Glu Leu His Arg Ser
 290 295 300

Ile Thr Pro Arg Glu Ala Ala Arg Ile Gln Ser Phe Ser Asp Asn Tyr
 305 310 315 320
 Ile Phe Tyr Gly Asn Lys Thr Ser Val Cys Lys Gln Ile Gly Asn Ala
 325 330 335
 Val Pro Pro Leu Leu Ala Leu Ala Leu Gly Lys Ala Ile Leu Lys Ser
 340 345 350
 Leu Arg Lys
 355

<210> 241
 <211> 1361
 <212> DNA
 <213> Helicobacter pylori

<220>
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 <222> (49)...(1305)

<400> 241
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 Met Lys Glu
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caa tca atg att gat ttt tta aaa ctt aga gat tat gac att aga aaa 105
 Gln Ser Met Ile Asp Phe Leu Lys Leu Arg Asp Tyr Asp Ile Arg Lys
 5 10 15

aca caa aat gcg cga tgg ata gat caa aaa tgc acc cct gat gtg ttg 153
 Thr Gln Asn Ala Arg Trp Ile Asp Gln Lys Cys Thr Pro Asp Val Leu
 20 25 30 35

tct ctt gtt gct gat tgt att tta gag ttt acg caa tgt aat att gga 201
 Ser Leu Val Ala Asp Cys Ile Leu Glu Phe Thr Gln Cys Asn Ile Gly
 40 45 50

aaa tca ttt tct att agg gat att tgg gat agc cct tac acc aat gaa 249
 Lys Ser Phe Ser Ile Arg Asp Ile Trp Asp Ser Pro Tyr Thr Asn Glu
 55 60 65

aat gtt aaa atg att ttt tct aaa cct gat tta aat tct gac ttt tcc 297
 Asn Val Lys Met Ile Phe Ser Lys Pro Asp Leu Asn Ser Asp Phe Ser
 70 75 80

atg cat gaa tac gat aag ttt ttt tct cag cct att aaa tta tta gcc 345
 Met His Glu Tyr Asp Lys Phe Phe Ser Gln Pro Ile Lys Leu Leu Ala
 85 90 95

tat agc ggt att tta ttt gaa aca aaa act ggc aat aga aat att tat 393
 Tyr Ser Gly Ile Leu Phe Glu Thr Lys Thr Gly Asn Arg Asn Ile Tyr
 100 105 110 115

acc ata caa aac ata gag cta tta gaa tat ctc atg caa aga gaa aca 441
 Thr Ile Gln Asn Ile Glu Leu Leu Glu Tyr Leu Met Gln Arg Glu Thr
 120 125 130

aac gct ttg aaa ttc ctt att tta tat att caa aag gta tta atg gat	489
Asn Ala Leu Lys Phe Leu Ile Leu Tyr Ile Gln Lys Val Leu Met Asp	
135 140 145	
agt ggg att tat cct tta ttt gac aac ttt tta caa aaa caa gac aca	537
Ser Gly Ile Tyr Pro Leu Phe Asp Asn Phe Leu Gln Lys Gln Asp Thr	
150 155 160	
gaa agt ttt aag caa cta aaa gat ggt ttc act cat ttt act atc aat	585
Glu Ser Phe Lys Gln Leu Lys Asp Gly Phe Thr His Phe Thr Ile Asn	
165 170 175	
aac aca gca atc aat aac gct acg gaa tgt ttt agg att ttt act aaa	633
Asn Thr Ala Ile Asn Asn Ala Thr Glu Cys Phe Arg Ile Phe Thr Lys	
180 185 190 195	
att atc aat cct tta gct ttt tat tat ggt aaa aaa ggc aca aga aaa	681
Ile Ile Asn Pro Leu Ala Phe Tyr Tyr Gly Lys Lys Gly Thr Arg Lys	
200 205 210	
ggg tat ttg tcc aac act ata att aca aaa gat gag ctt aat tat aat	729
Gly Tyr Leu Ser Asn Thr Ile Ile Thr Lys Asp Glu Leu Asn Tyr Asn	
215 220 225	
cgt atc aat tgg cga gat ata gga aaa gat aaa aat acc acc aga caa	777
Arg Ile Asn Trp Arg Asp Ile Gly Lys Asp Lys Asn Thr Thr Arg Gln	
230 235 240	
gaa tac gat ctt ata aac tct aaa agg att gct aat tct aac tat ctt	825
Glu Tyr Asp Leu Ile Asn Ser Lys Arg Ile Ala Asn Ser Asn Tyr Leu	
245 250 255	
att tca aaa gct aag aaa gtg gtg aaa cga tat aat gat aga ttt aat	873
Ile Ser Lys Ala Lys Lys Val Val Lys Arg Tyr Asn Asp Arg Phe Asn	
260 265 270 275	
aat tct ctc tct gaa gta aaa caa gaa aaa gaa gag tcg caa gcc aca	921
Asn Ser Leu Ser Glu Val Lys Gln Glu Lys Glu Glu Ser Gln Ala Thr	
280 285 290	
caa ata cac cat att ttt ccc atc caa gac ttt ccc att att gct aac	969
Gln Ile His His Ile Phe Pro Ile Gln Asp Phe Pro Ile Ile Ala Asn	
295 300 305	
tat ata gag aat ctt atc gca ctc act cct aat caa cat ttt att tac	1017
Tyr Ile Glu Asn Leu Ile Ala Leu Thr Pro Asn Gln His Phe Ile Tyr	
310 315 320	
gcc cac cct aat aat caa acc cgc ttg att gat aaa gat ttt caa tat	1065
Ala His Pro Asn Asn Gln Thr Arg Leu Ile Asp Lys Asp Phe Gln Tyr	
325 330 335	
atc tgc tta tta gct aaa acg acc aca att ctt aat gac act caa ggc	1113
Ile Cys Leu Leu Ala Lys Thr Thr Thr Ile Leu Asn Asp Thr Gln Gly	

340	345	350	355	
gta tat gat tgg aat gat tat att gtt gtg ttg aat atg ggc ctc aaa				1161
Val Tyr Asp Trp Asn Asp Tyr Ile Val Val Leu Asn Met Gly Leu Lys				
360		365	370	
aca act atc ttt tct caa gtc aag aac gaa tgg gaa tta tta aaa gta				1209
Thr Thr Ile Phe Ser Gln Val Lys Asn Glu Trp Glu Leu Leu Lys Val				
375		380	385	
ata gat gct ttt tat ttt gat ttt aac aag agc aaa gat cca agt tgg				1257
Ile Asp Ala Phe Tyr Phe Asp Phe Asn Lys Ser Lys Asp Pro Ser Trp				
390		395	400	
tca tac ttg cta gat aaa aac gat tta aga gct ttc aag cta aaa ttt				1305
Ser Tyr Leu Leu Asp Lys Asn Asp Leu Arg Ala Phe Lys Leu Lys Phe				
405		410	415	
taataagttt tattgaaact ggctataaaa acccgcttga cttatcttat cctttt				1361
<210> 242				
<211> 419				
<212> PRT				
<213> Helicobacter pylori				
<400> 242				
Met Lys Glu Gln Ser Met Ile Asp Phe Leu Lys Leu Arg Asp Tyr Asp				
1 5 10 15				
Ile Arg Lys Thr Gln Asn Ala Arg Trp Ile Asp Gln Lys Cys Thr Pro				
20 25 30				
Asp Val Leu Ser Leu Val Ala Asp Cys Ile Leu Glu Phe Thr Gln Cys				
35 40 45				
Asn Ile Gly Lys Ser Phe Ser Ile Arg Asp Ile Trp Asp Ser Pro Tyr				
50 55 60				
Thr Asn Glu Asn Val Lys Met Ile Phe Ser Lys Pro Asp Leu Asn Ser				
65 70 75 80				
Asp Phe Ser Met His Glu Tyr Asp Lys Phe Phe Ser Gln Pro Ile Lys				
85 90 95				
Leu Leu Ala Tyr Ser Gly Ile Leu Phe Glu Thr Lys Thr Gly Asn Arg				
100 105 110				
Asn Ile Tyr Thr Ile Gln Asn Ile Glu Leu Leu Glu Tyr Leu Met Gln				
115 120 125				
Arg Glu Thr Asn Ala Leu Lys Phe Leu Ile Leu Tyr Ile Gln Lys Val				
130 135 140				
Leu Met Asp Ser Gly Ile Tyr Pro Leu Phe Asp Asn Phe Leu Gln Lys				
145 150 155 160				
Gln Asp Thr Glu Ser Phe Lys Gln Leu Lys Asp Gly Phe Thr His Phe				
165 170 175				
Thr Ile Asn Asn Thr Ala Ile Asn Asn Ala Thr Glu Cys Phe Arg Ile				
180 185 190				
Phe Thr Lys Ile Ile Asn Pro Leu Ala Phe Tyr Tyr Gly Lys Lys Gly				
195 200 205				
Thr Arg Lys Gly Tyr Leu Ser Asn Thr Ile Ile Thr Lys Asp Glu Leu				
210 215 220				
Asn Tyr Asn Arg Ile Asn Trp Arg Asp Ile Gly Lys Asp Lys Asn Thr				

225		230		235		240									
Thr	Arg	Gln	Glu	Tyr	Asp	Leu	Ile	Asn	Ser	Lys	Arg	Ile	Ala	Asn	Ser
				245					250					255	
Asn	Tyr	Leu	Ile	Ser	Lys	Ala	Lys	Lys	Val	Val	Lys	Arg	Tyr	Asn	Asp
		260						265						270	
Arg	Phe	Asn	Asn	Ser	Leu	Ser	Glu	Val	Lys	Gln	Glu	Lys	Glu	Glu	Ser
		275					280					285			
Gln	Ala	Thr	Gln	Ile	His	His	Ile	Phe	Pro	Ile	Gln	Asp	Phe	Pro	Ile
	290					295					300				
Ile	Ala	Asn	Tyr	Ile	Glu	Asn	Leu	Ile	Ala	Leu	Thr	Pro	Asn	Gln	His
305						310					315				320
Phe	Ile	Tyr	Ala	His	Pro	Asn	Asn	Gln	Thr	Arg	Leu	Ile	Asp	Lys	Asp
				325					330					335	
Phe	Gln	Tyr	Ile	Cys	Leu	Leu	Ala	Lys	Thr	Thr	Thr	Ile	Leu	Asn	Asp
		340						345					350		
Thr	Gln	Gly	Val	Tyr	Asp	Trp	Asn	Asp	Tyr	Ile	Val	Val	Leu	Asn	Met
	355						360					365			
Gly	Leu	Lys	Thr	Thr	Ile	Phe	Ser	Gln	Val	Lys	Asn	Glu	Trp	Glu	Leu
	370					375					380				
Leu	Lys	Val	Ile	Asp	Ala	Phe	Tyr	Phe	Asp	Phe	Asn	Lys	Ser	Lys	Asp
385					390				395						400
Pro	Ser	Trp	Ser	Tyr	Leu	Leu	Asp	Lys	Asn	Asp	Leu	Arg	Ala	Phe	Lys
				405					410					415	
Leu	Lys	Phe													

<210> 243
 <211> 2610
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (90)...(2558)

<400> 243
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 atgaatttgg tttaatcctt aatcccctt atg ctc ttt gat caa acc tta acc 113
 Met Leu Phe Asp Gln Thr Leu Thr
 1 5

tat att tct tta ttt tct ggg gca gga gtg ggg tgc tat ggg ctt tta 161
 Tyr Ile Ser Leu Phe Ser Gly Ala Gly Val Gly Cys Tyr Gly Leu Leu
 10 15 20

gaa gag ggg ttt gaa tgc gtt gct acc aat gaa att tta gaa aaa cgc 209
 Glu Glu Gly Phe Glu Cys Val Ala Thr Asn Glu Ile Leu Glu Lys Arg
 25 30 35 40

ttg aat atc caa agg att aat cgc aaa tgc aaa tta gat gaa agc tac 257
 Leu Asn Ile Gln Arg Ile Asn Arg Lys Cys Lys Leu Asp Glu Ser Tyr
 45 50 55

att agt ggg gac att aaa aag cca gaa aca aaa gaa aaa att tta aag 305

Ile	Ser	Gly	Asp	Ile	Lys	Lys	Pro	Glu	Thr	Lys	Glu	Lys	Ile	Leu	Lys		
			60					65					70				
caa	att	gaa	ttt	tat	tct	aaa	aaa	ttt	ggg	aat	gat	agg	ggt	gat	tta	353	
Gln	Ile	Glu	Phe	Tyr	Ser	Lys	Lys	Phe	Gly	Asn	Asp	Arg	Val	Asp	Leu		
		75					80					85					
gtg	gta	gca	acc	cca	cct	tgt	caa	ggc	atg	agc	gta	gcc	aat	cat	aag	401	
Val	Val	Ala	Thr	Pro	Pro	Cys	Gln	Gly	Met	Ser	Val	Ala	Asn	His	Lys		
		90				95					100						
aag	aaa	aac	gat	gag	atc	aaa	cgg	aat	tct	ttg	gtg	ggt	gaa	agc	att	449	
Lys	Lys	Asn	Asp	Glu	Ile	Lys	Arg	Asn	Ser	Leu	Val	Val	Glu	Ser	Ile		
105					110				115						120		
gat	ttg	atc	aaa	caa	atc	aaa	ccc	aga	ttt	ttt	att	tta	gaa	aat	gtc	497	
Asp	Leu	Ile	Lys	Gln	Ile	Lys	Pro	Arg	Phe	Phe	Ile	Leu	Glu	Asn	Val		
				125					130						135		
cct	agt	ttt	tat	aaa	aca	ggg	tgt	ata	gac	aaa	aat	gat	aat	ttg	cta	545	
Pro	Ser	Phe	Tyr	Lys	Thr	Gly	Cys	Ile	Asp	Lys	Asn	Asp	Asn	Leu	Leu		
			140				145						150				
gaa	ata	gga	tct	atg	ata	gag	caa	aat	ttg	agt	ggc	gat	tat	atg	ctc	593	
Glu	Ile	Gly	Ser	Met	Ile	Glu	Gln	Asn	Leu	Ser	Gly	Asp	Tyr	Met	Leu		
		155					160					165					
tat	gat	gag	gta	atc	aat	ttt	aaa	aat	ttt	gga	gct	aat	tca	agc	cga	641	
Tyr	Asp	Glu	Val	Ile	Asn	Phe	Lys	Asn	Phe	Gly	Ala	Asn	Ser	Ser	Arg		
	170				175					180							
aca	aga	act	tta	gtg	ata	ggg	ggt	tgt	aaa	gag	ttt	aaa	gat	ttt	ata	689	
Thr	Arg	Thr	Leu	Val	Ile	Gly	Val	Cys	Lys	Glu	Phe	Lys	Asp	Phe	Ile		
185					190				195						200		
agc	gcg	tta	gaa	ttt	ttt	cct	gat	ttc	aaa	caa	gaa	aaa	acc	tta	aaa	737	
Ser	Ala	Leu	Glu	Phe	Phe	Pro	Asp	Phe	Lys	Gln	Glu	Lys	Thr	Leu	Lys		
				205					210					215			
gaa	gtg	ata	gga	tcg	tta	aaa	cca	ctt	gct	tgg	ggc	gag	tat	gac	aac	785	
Glu	Val	Ile	Gly	Ser	Leu	Lys	Pro	Leu	Ala	Trp	Gly	Glu	Tyr	Asp	Asn		
			220				225						230				
acg	gat	ttt	tat	cat	agt	ttt	aga	act	tat	cca	aag	cat	atg	caa	gaa	833	
Thr	Asp	Phe	Tyr	His	Ser	Phe	Arg	Thr	Tyr	Pro	Lys	His	Met	Gln	Glu		
		235					240					245					
tgg	att	aag	gat	tta	aaa	gaa	gga	caa	agc	gcg	ttt	gag	aat	aca	gaa	881	
Trp	Ile	Lys	Asp	Leu	Lys	Glu	Gly	Gln	Ser	Ala	Phe	Glu	Asn	Thr	Glu		
	250				255						260						
tta	aac	aaa	aaa	cct	cat	aga	att	gtt	ggc	agt	aag	att	gtc	tta	aat	929	
Leu	Asn	Lys	Lys	Pro	His	Arg	Ile	Val	Gly	Ser	Lys	Ile	Val	Leu	Asn		
265					270					275					280		

gtt tct aaa aat ggc gat aaa tat aaa aga caa aaa tat cat agc gtt	977
Val Ser Lys Asn Gly Asp Lys Tyr Lys Arg Gln Lys Tyr His Ser Val	
285 290 295	
gcc cct tgc att cat aca aga aac gac caa atg gct agc caa aac acg	1025
Ala Pro Cys Ile His Thr Arg Asn Asp Gln Met Ala Ser Gln Asn Thr	
300 305 310	
atc cac ccc aaa gat gat aga gtg ttt tcc att aga gag ctg atg ctt	1073
Ile His Pro Lys Asp Asp Arg Val Phe Ser Ile Arg Glu Leu Met Leu	
315 320 325	
tta atg aat atc cct agc cgt ttt aag tgg tta gat tta gaa tta caa	1121
Leu Met Asn Ile Pro Ser Arg Phe Lys Trp Leu Asp Leu Glu Leu Gln	
330 335 340	
gaa tta aac gcc ctt aac caa caa gaa aaa gaa aaa atc tcc aaa caa	1169
Glu Leu Asn Ala Leu Asn Gln Gln Glu Lys Glu Lys Ile Ser Lys Gln	
345 350 355 360	
aac gaa atg aat ata aga caa agc atc ggt gaa gct gtt cca acg att	1217
Asn Glu Met Asn Ile Arg Gln Ser Ile Gly Glu Ala Val Pro Thr Ile	
365 370 375	
att ttt aag caa att gcc ata aag ata aaa aat ttc atg tct caa acc	1265
Ile Phe Lys Gln Ile Ala Ile Lys Ile Lys Asn Phe Met Ser Gln Thr	
380 385 390	
cac tta gag cct aaa gaa atc att agg ctt att gat gtg cac cat tta	1313
His Leu Glu Pro Lys Glu Ile Ile Arg Leu Ile Asp Val His His Leu	
395 400 405	
tta gag cca caa aat ttg aag cga ttt att tta gaa aat caa aac aag	1361
Leu Glu Pro Gln Asn Leu Lys Arg Phe Ile Leu Glu Asn Gln Asn Lys	
410 415 420	
att gca aga gcg agt tta gtg agt ttg gca gaa atg tct aat tct aaa	1409
Ile Ala Arg Ala Ser Leu Val Ser Leu Ala Glu Met Ser Asn Ser Lys	
425 430 435 440	
cgc ata gaa aaa agc gcg tat ttt aca aac cct ttt att att aat gaa	1457
Arg Ile Glu Lys Ser Ala Tyr Phe Thr Asn Pro Phe Ile Ile Asn Glu	
445 450 455	
ata gcg aag tta ttg cca agc ttt aaa caa gag agt gtt act att ata	1505
Ile Ala Lys Leu Leu Pro Ser Phe Lys Gln Glu Ser Val Thr Ile Ile	
460 465 470	
gag cca agt gca ggg tgt ggg aat ttc tta agt gct ctt ttt aaa aaa	1553
Glu Pro Ser Ala Gly Cys Gly Asn Phe Leu Ser Ala Leu Phe Lys Lys	
475 480 485	
tac act tct gtt aaa aaa gtt tat tta aag tgt ata gat att gat aaa	1601
Tyr Thr Ser Val Lys Lys Val Tyr Leu Lys Cys Ile Asp Ile Asp Lys	
490 495 500	

aat agt tta gaa att tta gag att tta tat aaa gat tgc att cct aac	1649
Asn Ser Leu Glu Ile Leu Glu Ile Leu Tyr Lys Asp Cys Ile Pro Asn	
505 510 515 520	
aat ttt gag atg gaa ttg att tgc aaa gat ttt cta gcc tat gaa tgc	1697
Asn Phe Glu Met Glu Leu Ile Cys Lys Asp Phe Leu Ala Tyr Glu Cys	
525 530 535	
ggc aaa gtg gat tta att gtg ggc aat ccg cct ttt ggc aaa acg cat	1745
Gly Lys Val Asp Leu Ile Val Gly Asn Pro Pro Phe Gly Lys Thr His	
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Glu Arg Phe Lys Asp Tyr Ser Leu Arg Leu Thr His Leu Ala Gly Ile	
555 560 565	
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Phe Leu Glu Lys Ser Leu Lys Leu Ala Asn Phe Thr Ala Met Val Met	
570 575 580	
cct aaa aac ctt tta aac act aaa gag tat gca gaa act aga act aag	1889
Pro Lys Asn Leu Leu Asn Thr Lys Glu Tyr Ala Glu Thr Arg Thr Lys	
585 590 595 600	
ctt gaa aaa aag gga gta gga gcg att tta gac ttt ggc gag ctt ggt	1937
Leu Glu Lys Lys Gly Val Gly Ala Ile Leu Asp Phe Gly Glu Leu Gly	
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Phe Lys Gly Val Leu Val Glu Thr Ile Ala Ile Val Thr Gln Lys Ser	
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Lys Glu Val Leu Ala Arg Ser Leu Pro Leu Asn Leu Ser Ile Lys Gln	
635 640 645	
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Lys Pro Ser Tyr Ile Phe Asp Lys Gln Leu Pro Tyr Trp Val Ile Tyr	
650 655 660	
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Arg Asn Ala Phe Phe Asp Lys Val Phe His Ser Met Gln Phe Gly Leu	
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Phe Glu Val Phe Arg Asp Arg Gln Ile Thr Asn Ser Val Leu Val Lys	
685 690 695	
aat ggt att cgt gtg att aaa tct cgc aat att gat gaa aac gga aag	2225
Asn Gly Ile Arg Val Ile Lys Ser Arg Asn Ile Asp Glu Asn Gly Lys	
700 705 710	
att att agc att gaa aat tac gat agc tac att caa aaa gag gtt tta	2273
Ile Ile Ser Ile Glu Asn Tyr Asp Ser Tyr Ile Gln Lys Glu Val Leu	

715	720	725	
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Ser Pro Phe Lys Ile Ala Ser Phe Leu Asp Arg Asp Asp Val Tyr Leu			
730	735	740	
acc ccc aac atg acc tat aag cca agg att tta aaa aaa gaa aaa ggc			2369
Thr Pro Asn Met Thr Tyr Lys Pro Arg Ile Leu Lys Lys Glu Lys Gly			
745	750	755	760
tat gtg gtt aat ggc tct gtg gct att tta atc cct aaa aac ccc ata			2417
Tyr Val Val Asn Gly Ser Val Ala Ile Leu Ile Pro Lys Asn Pro Ile			
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tct tta agc aag aaa caa tgc gat tat atc tct agc gtt gaa ttt aga			2465
Ser Leu Ser Lys Lys Gln Cys Asp Tyr Ile Ser Ser Val Glu Phe Arg			
	780	785	790
gat ttt tat aaa atc gct agg aat tat caa acg cgc acc tta aat att			2513
Asp Phe Tyr Lys Ile Ala Arg Asn Tyr Gln Thr Arg Thr Leu Asn Ile			
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Asp Ser Met Ser Cys Phe Trp Phe Gly Ile Leu Arg Ser Ser Leu			
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Thr Asn Glu Ile Leu Glu Lys Arg Leu Asn Ile Gln Arg Ile Asn Arg			
	35	40	45
Lys Cys Lys Leu Asp Glu Ser Tyr Ile Ser Gly Asp Ile Lys Lys Pro			
	50	55	60
Glu Thr Lys Glu Lys Ile Leu Lys Gln Ile Glu Phe Tyr Ser Lys Lys			
65	70	75	80
Phe Gly Asn Asp Arg Val Asp Leu Val Val Ala Thr Pro Pro Cys Gln			
	85	90	95
Gly Met Ser Val Ala Asn His Lys Lys Asn Asp Glu Ile Lys Arg			
	100	105	110
Asn Ser Leu Val Val Glu Ser Ile Asp Leu Ile Lys Gln Ile Lys Pro			
	115	120	125
Arg Phe Phe Ile Leu Glu Asn Val Pro Ser Phe Tyr Lys Thr Gly Cys			
	130	135	140
Ile Asp Lys Asn Asp Asn Leu Leu Glu Ile Gly Ser Met Ile Glu Gln			
145	150	155	160
Asn Leu Ser Gly Asp Tyr Met Leu Tyr Asp Glu Val Ile Asn Phe Lys			

Ile Leu Asp Phe Gly Glu Leu Gly Phe Lys Gly Val Leu Val Glu Thr
 610 615 620
 Ile Ala Ile Val Thr Gln Lys Ser Lys Glu Val Leu Ala Arg Ser Leu
 625 630 635 640
 Pro Leu Asn Leu Ser Ile Lys Gln Lys Pro Ser Tyr Ile Phe Asp Lys
 645 650 655
 Gln Leu Pro Tyr Trp Val Ile Tyr Arg Asn Ala Phe Phe Asp Lys Val
 660 665 670
 Phe His Ser Met Gln Phe Gly Leu Phe Glu Val Phe Arg Asp Arg Gln
 675 680 685
 Ile Thr Asn Ser Val Leu Val Lys Asn Gly Ile Arg Val Ile Lys Ser
 690 695 700
 Arg Asn Ile Asp Glu Asn Gly Lys Ile Ile Ser Ile Glu Asn Tyr Asp
 705 710 715 720
 Ser Tyr Ile Gln Lys Glu Val Leu Ser Pro Phe Lys Ile Ala Ser Phe
 725 730 735
 Leu Asp Arg Asp Asp Val Tyr Leu Thr Pro Asn Met Thr Tyr Lys Pro
 740 745 750
 Arg Ile Leu Lys Lys Glu Lys Gly Tyr Val Val Asn Gly Ser Val Ala
 755 760 765
 Ile Leu Ile Pro Lys Asn Pro Ile Ser Leu Ser Lys Lys Gln Cys Asp
 770 775 780
 Tyr Ile Ser Ser Val Glu Phe Arg Asp Phe Tyr Lys Ile Ala Arg Asn
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 Gly Ile Leu Arg Ser Ser Leu
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 Gln Lys Ile Ile Asp Asp Ser Leu Glu Leu Ala Lys Lys Leu Gln Asp
 5 10 15
 agt atc agt aac cat ttg agc gat cag gaa aaa gcg ttc cac tct aaa 152
 Ser Ile Ser Asn His Leu Ser Asp Gln Glu Lys Ala Phe His Ser Lys
 20 25 30
 atg caa aag ctt tta aac aac cct gaa aac aaa gtc atg ctc ata gag 200
 Met Gln Lys Leu Leu Asn Asn Pro Glu Asn Lys Val Met Leu Ile Glu
 35 40 45

ctt atg gat cgg agt ttc agg tgc ttg gac aat aaa gcc cgc ttt gaa	248
Leu Met Asp Arg Ser Phe Arg Cys Leu Asp Asn Lys Ala Arg Phe Glu	
50 55 60 65	
atg att gag cat gtt tta gac aaa tac aaa agc cgt gag att ttt tct	296
Met Ile Glu His Val Leu Asp Lys Tyr Lys Ser Arg Glu Ile Phe Ser	
70 75 80	
cgc ttt gaa aaa gtg ctt tta atg ggg ttt tta agc ttt ggg aaa atg	344
Pro Phe Glu Lys Val Leu Leu Met Gly Phe Leu Ser Phe Gly Lys Met	
85 90 95	
ctc cct gat atg agc gtg cct ttc ttt gtc aat aaa atc aga agc gac	392
Leu Pro Asp Met Ser Val Pro Phe Phe Val Asn Lys Ile Arg Ser Asp	
100 105 110	
acg aaa gcg atg gtc ttg gat caa gaa gag agc cag tta aaa gag cgg	440
Thr Lys Ala Met Val Leu Asp Gln Glu Glu Ser Gln Leu Lys Glu Arg	
115 120 125	
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Ile Leu Lys Arg Lys Asn Glu Lys Ile Ile Leu Asn Val Asn Phe Ile	
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Gly Glu Glu Val Leu Gly Glu Glu Glu Ala Asn Ala Arg Phe Glu Lys	
150 155 160	
tac tct caa gcc cta aaa tcc aac tac atc caa tac att tcc att aaa	584
Tyr Ser Gln Ala Leu Lys Ser Asn Tyr Ile Gln Tyr Ile Ser Ile Lys	
165 170 175	
atc acg acg att ttt tct caa atc aat atc ctt gat ttt gaa tac tct	632
Ile Thr Thr Ile Phe Ser Gln Ile Asn Ile Leu Asp Phe Glu Tyr Ser	
180 185 190	
aaa aaa gag att gtc aaa cgc cta gac gct ctt tac gcc ctg gct tta	680
Lys Lys Glu Ile Val Lys Arg Leu Asp Ala Leu Tyr Ala Leu Ala Leu	
195 200 205	
gaa gaa gaa aaa aaa caa ggc atg cct aaa ttc atc aat ttg gat atg	728
Glu Glu Glu Lys Lys Gln Gly Met Pro Lys Phe Ile Asn Leu Asp Met	
210 215 220 225	
gaa gaa ttt agg gat tta gag cta aca gtg gag tcg ttt atg gaa tcc	776
Glu Glu Phe Arg Asp Leu Glu Leu Thr Val Glu Ser Phe Met Glu Ser	
230 235 240	
atc gct aaa ttt gat ttg aac gct ggt att gtg ctg caa gcc tat att	824
Ile Ala Lys Phe Asp Leu Asn Ala Gly Ile Val Leu Gln Ala Tyr Ile	
245 250 255	
cgc gat tct tat gaa tat ttg aaa aaa ctg cac gct ttt tct aaa gaa	872
Pro Asp Ser Tyr Glu Tyr Leu Lys Lys Leu His Ala Phe Ser Lys Glu	

260	265	270	
agg gtt tta aaa ggg ttg aag ccc att aaa atc cgc ttt gtt aag gga Arg Val Leu Lys Gly Leu Lys Pro Ile Lys Ile Arg Phe Val Lys Gly 275 280 285			920
gcg aac atg gag agc gaa gaa act atc gct tcc gtg aaa gat tgg gcg Ala Asn Met Glu Ser Glu Glu Thr Ile Ala Ser Val Lys Asp Trp Ala 290 295 300 305			968
tta ccc aca ttt tcc aat aag caa gac acc gat tct aat tac aat aaa Leu Pro Thr Phe Ser Asn Lys Gln Asp Thr Asp Ser Asn Tyr Asn Lys 310 315 320			1016
atg ttg gat ttt gtt tta gag ggc gat aat tat aaa tac att cat att Met Leu Asp Phe Val Leu Glu Gly Asp Asn Tyr Lys Tyr Ile His Ile 325 330 335			1064
ggc gca gcg agt cat aat att ttt gaa atc gct tat gtc tat acg cgt Gly Ala Ala Ser His Asn Ile Phe Glu Ile Ala Tyr Val Tyr Thr Arg 340 345 350			1112
atc cat gcc att aat gat cct gtt gtg tta gag cat ttc agc ttt gaa Ile His Ala Ile Asn Asp Pro Val Val Leu Glu His Phe Ser Phe Glu 355 360 365			1160
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cac aag ctc att ctt tat gcg ccg gtg tgc gat gaa gcg cat ttt aac His Lys Leu Ile Leu Tyr Ala Pro Val Cys Asp Glu Ala His Phe Asn 390 395 400			1256
aat gcg atc gct tac ttg gtg agg agg tta gac gaa aac acc tca agc Asn Ala Ile Ala Tyr Leu Val Arg Arg Leu Asp Glu Asn Thr Ser Ser 405 410 415			1304
gat aat ttc atg aag gct ttc ttt aac ctc aaa gta ggc acg agc gaa Asp Asn Phe Met Lys Ala Phe Phe Asn Leu Lys Val Gly Thr Ser Glu 420 425 430			1352
tgg aaa gat caa gaa caa cgc ttt tta aac agc ctt aaa gga att gcc Trp Lys Asp Gln Glu Gln Arg Phe Leu Asn Ser Leu Lys Gly Ile Ala 435 440 445			1400
act tta gac aat gcc acc cat agg act caa gat agg aac gcc aaa caa Thr Leu Asp Asn Ala Thr His Arg Thr Gln Asp Arg Asn Ala Lys Gln 450 455 460 465			1448
agc ggg cat acc act tac cca aac cac tcc ttt aaa aac gaa agc gat Ser Gly His Thr Thr Tyr Pro Asn His Ser Phe Lys Asn Glu Ser Asp 470 475 480			1496
acc gat ttt att tta aaa gcc aac cga gaa tgg gct aaa aaa gtg cgc			1544

Thr	Asp	Phe	Ile	Leu	Lys	Ala	Asn	Arg	Glu	Trp	Ala	Lys	Lys	Val	Arg		
			485					490					495				
gag	aaa	atg	cgt	aac	gct	cct	att	tta	gag	ctt	tac	cca	gag	atg	gat	1592	
Glu	Lys	Met	Arg	Asn	Ala	Pro	Ile	Leu	Glu	Leu	Tyr	Pro	Glu	Met	Asp		
		500					505					510					
ggg	agg	ttt	gaa	gat	cct	aat	cta	acc	cct	tta	gaa	gtc	ttt	gat	aga	1640	
Gly	Arg	Phe	Glu	Asp	Pro	Asn	Leu	Thr	Pro	Leu	Glu	Val	Phe	Asp	Arg		
	515					520					525						
atc	cat	cat	aaa	aaa	atc	gct	agc	gtg	cat	tta	gcg	gat	aag	gaa	gcg	1688	
Ile	His	His	Lys	Lys	Ile	Ala	Ser	Val	His	Leu	Ala	Asp	Lys	Glu	Ala		
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Ile	Leu	Lys	Ala	Leu	Glu	Val	Ala	Lys	Ser	Asp	Lys	Ser	Arg	Phe	Ser		
			550					555						560			
caa	aaa	agc	ttt	aca	gaa	atc	cat	gcc	tta	atg	agt	caa	acc	gcc	cag	1784	
Gln	Lys	Ser	Phe	Thr	Glu	Ile	His	Ala	Leu	Met	Ser	Gln	Thr	Ala	Gln		
			565					570					575				
ctt	ttt	aga	gaa	aga	aga	ggc	gat	ttg	ata	ggg	att	tcc	gct	tta	gaa	1832	
Leu	Phe	Arg	Glu	Arg	Arg	Gly	Asp	Leu	Ile	Gly	Ile	Ser	Ala	Leu	Glu		
		580					585					590					
gtg	ggt	aag	act	ttc	gct	gaa	acg	gac	gct	gaa	gtg	agc	gaa	gcc	att	1880	
Val	Gly	Lys	Thr	Phe	Ala	Glu	Thr	Asp	Ala	Glu	Val	Ser	Glu	Ala	Ile		
	595					600					605						
gac	ttt	tta	gag	ttt	tac	cct	tac	agc	tta	agg	gtg	ttg	caa	gag	caa	1928	
Asp	Phe	Leu	Glu	Phe	Tyr	Pro	Tyr	Ser	Leu	Arg	Val	Leu	Gln	Glu	Gln		
610					615					620					625		
aac	aca	aaa	acg	caa	ttc	acc	cct	aaa	ggc	gtg	ggc	gtg	gtc	att	gcc	1976	
Asn	Thr	Lys	Thr	Gln	Phe	Thr	Pro	Lys	Gly	Val	Gly	Val	Val	Ile	Ala		
				630					635					640			
cca	tgg	aat	ttc	cct	gtg	ggc	att	tct	gta	ggc	act	atc	gct	gcc	ccc	2024	
Pro	Trp	Asn	Phe	Pro	Val	Gly	Ile	Ser	Val	Gly	Thr	Ile	Ala	Ala	Pro		
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cta	gct	acg	ggc	aat	cgg	gtg	att	tac	aag	ccc	tca	agt	ttg	tct	agc	2072	
Leu	Ala	Thr	Gly	Asn	Arg	Val	Ile	Tyr	Lys	Pro	Ser	Ser	Leu	Ser	Ser		
		660					665					670					
gta	acg	ggc	tat	aag	ctt	tgt	gag	tgc	ttt	tgg	gat	gcg	ggc	gtg	cct	2120	
Val	Thr	Gly	Tyr	Lys	Leu	Cys	Glu	Cys	Phe	Trp	Asp	Ala	Gly	Val	Pro		
	675					680					685						
aga	gat	gcg	ctc	att	tac	ttg	ccc	tct	aaa	ggg	agc	gat	att	agc	gaa	2168	
Arg	Asp	Ala	Leu	Ile	Tyr	Leu	Pro	Ser	Lys	Gly	Ser	Asp	Ile	Ser	Glu		
690					695					700					705		

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Glu Asp Thr Ala Tyr Lys Met Leu Lys Ala Asn Pro Thr Leu Ala Leu	
725 730 735	
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Ser Ala Glu Thr Gly Gly Lys Asn Ala Thr Ile Val Ser Lys Met Ala	
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Asp Arg Asp Gln Ala Ile Lys Asn Val Ile His Ser Ala Phe Ser Asn	
755 760 765	
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770 775 780 785	
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Val Tyr Glu Asp Glu Asn Phe Lys Lys Thr Leu Ile Asp Ala Thr Leu	
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Lys Ser Tyr Glu Asn Tyr Glu Ile Pro Val Ser Phe Val Asn Asp Asn	
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ccc tat ttg atg aag cca agc atc aaa tac ggc act aaa aaa ggc gat	2648
Pro Tyr Leu Met Lys Pro Ser Ile Lys Tyr Gly Thr Lys Lys Gly Asp	
850 855 860 865	
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Tyr Leu Glu Arg Ile Glu Ala Gly Asn Ile Tyr Ile Asn Lys Pro Thr	
915 920 925	

aca gga gcg att gtc ttg cgc cag cct ttt ggg ggg gtt aaa aaa tcc	2888
Thr Gly Ala Ile Val Leu Arg Gln Pro Phe Gly Gly Val Lys Lys Ser	
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gct gtg ggg ttt ggg agg aaa gta ggc att ttc aac tat atc acg caa	2936
Ala Val Gly Phe Gly Arg Lys Val Gly Ile Phe Asn Tyr Ile Thr Gln	
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Phe Val Asn Ile Cys Gln Glu Glu Glu Asp Glu Asn Ala Leu Lys Asn	
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Pro Leu Ser Glu Ala Leu Glu Asn Leu Thr Gln Lys Gly Tyr Asp Glu	
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Tyr His Tyr Lys His Glu Phe Ser Gln Thr Lys Asp Tyr Val Lys Ile	
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1125 1130 1135	
gct aaa cca tgc cta aat ggg cgt ttt gaa ttg ctg tat tac cac tta	3512
Ala Lys Pro Cys Leu Asn Gly Arg Phe Glu Leu Leu Tyr Tyr His Leu	

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Glu Arg Ser Val Ser Ile Ser Tyr His Arg Tyr Gly Asn Leu Gly Ser			
1155	1160	1165	
agg gtt tta agg caa ccc act tgc cac aaa tca tgc tgt gct gaa aaa			3608
Arg Val Leu Arg Gln Pro Thr Cys His Lys Ser Cys Cys Ala Glu Lys			
1170	1175	1180	1185
taaatattgt attaaataag gagatcaaaa tgggacatgt tgttttaagt acccctat			3666
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<211> 1185			
<212> PRT			
<213> Helicobacter pylori			
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Met Gln Lys Ile Ile Asp Asp Ser Leu Glu Leu Ala Lys Lys Leu Gln			
1 5 10 15			
Asp Ser Ile Ser Asn His Leu Ser Asp Gln Glu Lys Ala Phe His Ser			
20 25 30			
Lys Met Gln Lys Leu Leu Asn Asn Pro Glu Asn Lys Val Met Leu Ile			
35 40 45			
Glu Leu Met Asp Arg Ser Phe Arg Cys Leu Asp Asn Lys Ala Arg Phe			
50 55 60			
Glu Met Ile Glu His Val Leu Asp Lys Tyr Lys Ser Arg Glu Ile Phe			
65 70 75 80			
Ser Pro Phe Glu Lys Val Leu Leu Met Gly Phe Leu Ser Phe Gly Lys			
85 90 95			
Met Leu Pro Asp Met Ser Val Pro Phe Phe Val Asn Lys Ile Arg Ser			
100 105 110			
Asp Thr Lys Ala Met Val Leu Asp Gln Glu Glu Ser Gln Leu Lys Glu			
115 120 125			
Arg Ile Leu Lys Arg Lys Asn Glu Lys Ile Ile Leu Asn Val Asn Phe			
130 135 140			
Ile Gly Glu Glu Val Leu Gly Glu Glu Glu Ala Asn Ala Arg Phe Glu			
145 150 155 160			
Lys Tyr Ser Gln Ala Leu Lys Ser Asn Tyr Ile Gln Tyr Ile Ser Ile			
165 170 175			
Lys Ile Thr Thr Ile Phe Ser Gln Ile Asn Ile Leu Asp Phe Glu Tyr			
180 185 190			
Ser Lys Lys Glu Ile Val Lys Arg Leu Asp Ala Leu Tyr Ala Leu Ala			
195 200 205			
Leu Glu Glu Glu Lys Lys Gln Gly Met Pro Lys Phe Ile Asn Leu Asp			
210 215 220			
Met Glu Glu Phe Arg Asp Leu Glu Leu Thr Val Glu Ser Phe Met Glu			
225 230 235 240			
Ser Ile Ala Lys Phe Asp Leu Asn Ala Gly Ile Val Leu Gln Ala Tyr			
245 250 255			
Ile Pro Asp Ser Tyr Glu Tyr Leu Lys Lys Leu His Ala Phe Ser Lys			
260 265 270			
Glu Arg Val Leu Lys Gly Leu Lys Pro Ile Lys Ile Arg Phe Val Lys			
275 280 285			
Gly Ala Asn Met Glu Ser Glu Glu Thr Ile Ala Ser Val Lys Asp Trp			

290	295	300
Ala Leu Pro Thr Phe Ser Asn Lys Gln Asp Thr Asp Ser Asn Tyr Asn		
305	310	315
Lys Met Leu Asp Phe Val Leu Glu Gly Asp Asn Tyr Lys Tyr Ile His		320
	325	330
Ile Gly Ala Ala Ser His Asn Ile Phe Glu Ile Ala Tyr Val Tyr Thr		335
	340	345
Arg Ile His Ala Ile Asn Asp Pro Val Val Leu Glu His Phe Ser Phe		350
	355	360
Glu Met Leu Glu Gly Met Ser Leu Gln Ala Ser Gln Glu Leu Lys Glu		365
	370	375
Met His Lys Leu Ile Leu Tyr Ala Pro Val Cys Asp Glu Ala His Phe		380
385	390	395
Asn Asn Ala Ile Ala Tyr Leu Val Arg Arg Leu Asp Glu Asn Thr Ser		400
	405	410
Ser Asp Asn Phe Met Lys Ala Phe Phe Asn Leu Lys Val Gly Thr Ser		415
	420	425
Glu Trp Lys Asp Gln Glu Gln Arg Phe Leu Asn Ser Leu Lys Gly Ile		430
	435	440
Ala Thr Leu Asp Asn Ala Thr His Arg Thr Gln Asp Arg Asn Ala Lys		445
	450	455
Gln Ser Gly His Thr Thr Tyr Pro Asn His Ser Phe Lys Asn Glu Ser		460
465	470	475
Asp Thr Asp Phe Ile Leu Lys Ala Asn Arg Glu Trp Ala Lys Lys Val		480
	485	490
Arg Glu Lys Met Arg Asn Ala Pro Ile Leu Glu Leu Tyr Pro Glu Met		495
	500	505
Asp Gly Arg Phe Glu Asp Pro Asn Leu Thr Pro Leu Glu Val Phe Asp		510
	515	520
Arg Ile His His Lys Lys Ile Ala Ser Val His Leu Ala Asp Lys Glu		525
530	535	540
Ala Ile Leu Lys Ala Leu Glu Val Ala Lys Ser Asp Lys Ser Arg Phe		545
545	550	555
Ser Gln Lys Ser Phe Thr Glu Ile His Ala Leu Met Ser Gln Thr Ala		560
	565	570
Gln Leu Phe Arg Glu Arg Arg Gly Asp Leu Ile Gly Ile Ser Ala Leu		575
	580	585
Glu Val Gly Lys Thr Phe Ala Glu Thr Asp Ala Glu Val Ser Glu Ala		590
	595	600
Ile Asp Phe Leu Glu Phe Tyr Pro Tyr Ser Leu Arg Val Leu Gln Glu		605
	610	615
Gln Asn Thr Lys Thr Gln Phe Thr Pro Lys Gly Val Gly Val Val Ile		620
625	630	635
Ala Pro Trp Asn Phe Pro Val Gly Ile Ser Val Gly Thr Ile Ala Ala		640
	645	650
Pro Leu Ala Thr Gly Asn Arg Val Ile Tyr Lys Pro Ser Ser Leu Ser		655
	660	665
Ser Val Thr Gly Tyr Lys Leu Cys Glu Cys Phe Trp Asp Ala Gly Val		670
	675	680
Pro Arg Asp Ala Leu Ile Tyr Leu Pro Ser Lys Gly Ser Asp Ile Ser		685
	690	695
Glu His Leu Leu Arg Asp Glu Ser Ile Gln Phe Ala Ile Leu Thr Gly		700
705	710	715
Gly Glu Asp Thr Ala Tyr Lys Met Leu Lys Ala Asn Pro Thr Leu Ala		720
	725	730
		735

Leu	Ser	Ala	Glu	Thr	Gly	Gly	Lys	Asn	Ala	Thr	Ile	Val	Ser	Lys	Met	
			740					745					750			
Ala	Asp	Arg	Asp	Gln	Ala	Ile	Lys	Asn	Val	Ile	His	Ser	Ala	Phe	Ser	
			755					760					765			
Asn	Ser	Gly	Gln	Lys	Cys	Ser	Ala	Thr	Ser	Leu	Leu	Val	Leu	Glu	Lys	
			770					775					780			
Glu	Val	Tyr	Glu	Asp	Glu	Asn	Phe	Lys	Lys	Thr	Leu	Ile	Asp	Ala	Thr	
785						790				795					800	
Leu	Ser	Leu	Ser	Val	Gly	Asp	Pro	Phe	Asp	Phe	Lys	Asn	Lys	Ile	Gly	
				805					810						815	
Ala	Leu	Ala	Asp	Lys	Pro	Asn	Glu	Lys	Val	Ile	Lys	Ala	Ile	Asp	Glu	
			820					825					830			
Leu	Lys	Ser	Tyr	Glu	Asn	Tyr	Glu	Ile	Pro	Val	Ser	Phe	Val	Asn	Asp	
			835					840					845			
Asn	Pro	Tyr	Leu	Met	Lys	Pro	Ser	Ile	Lys	Tyr	Gly	Thr	Lys	Lys	Gly	
			850					855				860				
Asp	Phe	Thr	His	Gln	Thr	Glu	Leu	Phe	Thr	Pro	Ile	Leu	Ser	Val	Met	
865					870					875					880	
Glu	Ala	Lys	Asp	Leu	Asp	Glu	Ala	Ile	Glu	Ile	Ala	Asn	Ser	Thr	Gly	
				885					890						895	
Tyr	Gly	Leu	Thr	Ser	Ala	Leu	Glu	Ser	Leu	Asp	Glu	Arg	Glu	Trp	Glu	
			900					905					910			
Tyr	Tyr	Leu	Glu	Arg	Ile	Glu	Ala	Gly	Asn	Ile	Tyr	Ile	Asn	Lys	Pro	
			915					920					925			
Thr	Thr	Gly	Ala	Ile	Val	Leu	Arg	Gln	Pro	Phe	Gly	Gly	Val	Lys	Lys	
			930					935				940				
Ser	Ala	Val	Gly	Phe	Gly	Arg	Lys	Val	Gly	Ile	Phe	Asn	Tyr	Ile	Thr	
945					950					955					960	
Gln	Phe	Val	Asn	Ile	Cys	Gln	Glu	Glu	Glu	Asp	Glu	Asn	Ala	Leu	Lys	
				965					970						975	
Asn	Pro	Leu	Ser	Glu	Ala	Leu	Glu	Asn	Leu	Thr	Gln	Lys	Gly	Tyr	Asp	
			980					985					990			
Glu	His	Thr	His	Glu	Leu	Lys	Arg	Ala	Ile	Phe	Met	Ala	Lys	Ser	Tyr	
			995					1000					1005			
Ala	Tyr	His	Tyr	Lys	His	Glu	Phe	Ser	Gln	Thr	Lys	Asp	Tyr	Val	Lys	
			1010					1015				1020				
Ile	Arg	Gly	Glu	Asp	Asn	Leu	Phe	Ser	Tyr	Thr	Lys	Val	Lys	Ser	Val	
1025					1030					1035					1040	
Gly	Tyr	Arg	Ile	Thr	Glu	Lys	Asp	Thr	Leu	Ser	Asp	Met	Leu	Gly	Val	
				1045					1050						1055	
Ala	Leu	Ala	Cys	Leu	Ile	Ser	Gln	Ile	Pro	Leu	Thr	Leu	Ser	Ile	Glu	
			1060					1065					1070			
Asn	Glu	Arg	Thr	Asn	Lys	Asp	Leu	Thr	Phe	Phe	Leu	Glu	Cys	Leu	Lys	
			1075					1080					1085			
Ala	Leu	Gln	Ala	Ser	Ala	Pro	Ile	Val	Tyr	Glu	Ser	Leu	Gln	Lys	Phe	
			1090					1095				1100				
Ser	Glu	Lys	Leu	Asn	Thr	Phe	Asn	Arg	Val	Arg	Tyr	Leu	Lys	Ser	Asp	
1105					1110					1115					1120	
Leu	Asp	Leu	Leu	His	Glu	Gln	Ala	Ser	Ala	Leu	Gly	Met	Val	Leu	Ala	
				1125					1130						1135	
Thr	Ala	Lys	Pro	Cys	Leu	Asn	Gly	Arg	Phe	Glu	Leu	Leu	Tyr	Tyr	His	
			1140					1145					1150			
Leu	Glu	Arg	Ser	Val	Ser	Ile	Ser	Tyr	His	Arg	Tyr	Gly	Asn	Leu	Gly	
			1155					1160					1165			
Ser	Arg	Val	Leu	Arg	Gln	Pro	Thr	Cys	His	Lys	Ser	Cys	Cys	Ala	Glu	

1170
 Lys
 1185

1175

1180

<210> 247
 <211> 810
 <212> DNA
 <213> Helicobacter pylori

<220>
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 tgtttaaaga taaccaatta atctatgaaa gcgaggcaga aaaatt atg atg act 115
 Met Met Thr
 1

aag aac gcg tat gcg ttt gtt gtg att gaa gaa agc gtt atg gtg ttt 163
 Lys Asn Ala Tyr Ala Phe Val Val Ile Glu Glu Ser Val Met Val Phe
 5 10 15

aaa cgc acc aaa gat gag ggg tta atg cct atc ttt gaa ggc ttt gtg 211
 Lys Arg Thr Lys Asp Glu Gly Leu Met Pro Ile Phe Glu Gly Phe Val
 20 25 30 35

cct tta aaa gag ggc ttt ttg aaa agt ttt aaa gag cgt tgc aat ttg 259
 Pro Leu Lys Glu Gly Phe Leu Lys Ser Phe Lys Glu Arg Cys Asn Leu
 40 45 50

gaa ttt tta gaa aat tta gac ctt ttg ttt ttg tat gac aaa cca tcc 307
 Glu Phe Leu Glu Asn Leu Asp Leu Leu Phe Leu Tyr Asp Lys Pro Ser
 55 60 65

gca cac gag atc ttt tcc ttg tgc aag gag ctg aaa aat tcc atc tgg 355
 Ala His Glu Ile Phe Ser Leu Cys Lys Glu Leu Lys Asn Ser Ile Trp
 70 75 80

gac agg aag ctt gtg gta gcg cta gtg gag gct tta gag ggg ttt aag 403
 Asp Arg Lys Leu Val Val Ala Leu Val Glu Ala Leu Glu Gly Phe Lys
 85 90 95

gat tgg aat ttg tgc ctt aaa ata gaa gac aag cgt tct aac agc ttg 451
 Asp Trp Asn Leu Ser Leu Lys Ile Glu Asp Lys Arg Ser Asn Ser Leu
 100 105 110 115

ggt aat ggc acc aaa aaa ttg ctc acc aac gct gat tta ggg agc gac 499
 Gly Asn Gly Thr Lys Lys Leu Leu Thr Asn Ala Asp Leu Gly Ser Asp
 120 125 130

tat aaa aca atc gtg ata gac agc atg aaa aca tac cac caa agc cag 547
 Tyr Lys Thr Ile Val Ile Asp Ser Met Lys Thr Tyr His Gln Ser Gln
 135 140 145

caa gaa aaa tat aaa aga gaa aga ggc gaa acg cta gag gtt cgc ccc 595
 Gln Glu Lys Tyr Lys Arg Glu Arg Gly Glu Thr Leu Glu Val Arg Pro
 150 155 160

aca aca ccc cct agc tat ggg ggt gga agc att aga atc agc ggc gat 643
 Thr Thr Pro Pro Ser Tyr Gly Gly Gly Ser Ile Arg Ile Ser Gly Asp
 165 170 175

aaa aag cct gat ttt gat gaa gaa aat ttt taaaagaaag gacaaccgat 693
 Lys Lys Pro Asp Phe Asp Glu Glu Asn Phe
 180 185

gagcagagtg caaatggata ccgaagaggt caggggaattt gtagggcatt tagaacgctt 753
 taaagagtta ctaagagagg aagtgaacag cttgagtaat catttccata atttaga 810

<210> 248
 <211> 189
 <212> PRT
 <213> Helicobacter pylori

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 Met Met Thr Lys Asn Ala Tyr Ala Phe Val Val Ile Glu Glu Ser Val
 1 5 10 15
 Met Val Phe Lys Arg Thr Lys Asp Glu Gly Leu Met Pro Ile Phe Glu
 20 25 30
 Gly Phe Val Pro Leu Lys Glu Gly Phe Leu Lys Ser Phe Lys Glu Arg
 35 40 45
 Cys Asn Leu Glu Phe Leu Glu Asn Leu Asp Leu Leu Phe Leu Tyr Asp
 50 55 60
 Lys Pro Ser Ala His Glu Ile Phe Ser Leu Cys Lys Glu Leu Lys Asn
 65 70 75 80
 Ser Ile Trp Asp Arg Lys Leu Val Val Ala Leu Val Glu Ala Leu Glu
 85 90 95
 Gly Phe Lys Asp Trp Asn Leu Ser Leu Lys Ile Glu Asp Lys Arg Ser
 100 105 110
 Asn Ser Leu Gly Asn Gly Thr Lys Lys Leu Leu Thr Asn Ala Asp Leu
 115 120 125
 Gly Ser Asp Tyr Lys Thr Ile Val Ile Asp Ser Met Lys Thr Tyr His
 130 135 140
 Gln Ser Gln Gln Glu Lys Tyr Lys Arg Glu Arg Gly Glu Thr Leu Glu
 145 150 155 160
 Val Arg Pro Thr Thr Pro Pro Ser Tyr Gly Gly Gly Ser Ile Arg Ile
 165 170 175
 Ser Gly Asp Lys Lys Pro Asp Phe Asp Glu Glu Asn Phe
 180 185

<210> 249
 <211> 940
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS

<222> (58)...(852)

<400> 249

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Met

1

aac act tac gct caa gaa tcc aag ctc agg tta aaa acc aaa ata ggg 108
Asn Thr Tyr Ala Gln Glu Ser Lys Leu Arg Leu Lys Thr Lys Ile Gly
5 10 15

gct gat ggg cgg tgc gtg att gaa gac aat ttt ttc acg ccc ccc ttt 156
Ala Asp Gly Arg Cys Val Ile Glu Asp Asn Phe Phe Thr Pro Pro Phe
20 25 30

aag ctc atg gcg ccc ttt tac cct aaa gac gat tta gcg gaa atc atg 204
Lys Leu Met Ala Pro Phe Tyr Pro Lys Asp Asp Leu Ala Glu Ile Met
35 40 45

ctt tta gcg gta agc cct ggc atg atg agg ggc gat gcg caa gat gtg 252
Leu Leu Ala Val Ser Pro Gly Met Met Arg Gly Asp Ala Gln Asp Val
50 55 60 65

caa tta aac atc ggt cca aat tgc aag tta agg atc act tcg caa tcc 300
Gln Leu Asn Ile Gly Pro Asn Cys Lys Leu Arg Ile Thr Ser Gln Ser
70 75 80

ttt gaa aaa atc cat aac act gaa gat ggg ttt gcc agc aga gac atg 348
Phe Glu Lys Ile His Asn Thr Glu Asp Gly Phe Ala Ser Arg Asp Met
85 90 95

cat att gtt gtg ggg gaa aac gct ttt tta gat ttt gcg cct ttc ccg 396
His Ile Val Val Gly Glu Asn Ala Phe Leu Asp Phe Ala Pro Phe Pro
100 105 110

tta atc ccc ttt gaa aac gcg cat ttt aag ggc aac acc acg att tct 444
Leu Ile Pro Phe Glu Asn Ala His Phe Lys Gly Asn Thr Thr Ile Ser
115 120 125

ttg cgc tct agc tct caa ttg ctc tat agt gaa atc att gtc gca ggg 492
Leu Arg Ser Ser Ser Gln Leu Leu Tyr Ser Glu Ile Ile Val Ala Gly
130 135 140 145

cga gtg gcg cgc aat gag ttg ttt aaa ttc aac cgc ttg cac acc aaa 540
Arg Val Ala Arg Asn Glu Leu Phe Lys Phe Asn Arg Leu His Thr Lys
150 155 160

atc tct att tta caa gat gag aaa ccc atc tat tat gac aac acg att 588
Ile Ser Ile Leu Gln Asp Glu Lys Pro Ile Tyr Tyr Asp Asn Thr Ile
165 170 175

tta gat ccc aaa acc acc gac tta aat aac atg tgc atg ttt gat ggc 636
Leu Asp Pro Lys Thr Thr Asp Leu Asn Asn Met Cys Met Phe Asp Gly
180 185 190

tat acg cat tat ttg aat ttg gtg ctt gtc aat tgc ccc ata gag ctc	684
Tyr Thr His Tyr Leu Asn Leu Val Leu Val Asn Cys Pro Ile Glu Leu	
195 200 205	

tct ggt gtg cga gaa tgc att gaa gaa agc gaa ggg gtg gat ggg gca	732
Ser Gly Val Arg Glu Cys Ile Glu Glu Ser Glu Gly Val Asp Gly Ala	
210 215 220 225	

gtg agt gaa acc gct agt tct cat tta tgc gtg aaa gct tta gcg aaa	780
Val Ser Glu Thr Ala Ser Ser His Leu Cys Val Lys Ala Leu Ala Lys	
230 235 240	

ggc tca gaa ccc tta ttg cat tta aga gaa aaa atc gct cgc ttg gtt	828
Gly Ser Glu Pro Leu Leu His Leu Arg Glu Lys Ile Ala Arg Leu Val	
245 250 255	

acg caa acc acc acg caa aag gtt tgaaagcact tcaaaaagat taaagtcctt	882
Thr Gln Thr Thr Thr Gln Lys Val	
260 265	

tagtcttttt actccccct ttttttgacc ctataagctg aaaggcctga attcagta	940
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<210> 250

<211> 265

<212> PRT

<213> Helicobacter pylori

<400> 250

Met Asn Thr Tyr Ala Gln Glu Ser Lys Leu Arg Leu Lys Thr Lys Ile	
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Gly Ala Asp Gly Arg Cys Val Ile Glu Asp Asn Phe Phe Thr Pro Pro	
20 25 30	
Phe Lys Leu Met Ala Pro Phe Tyr Pro Lys Asp Asp Leu Ala Glu Ile	
35 40 45	
Met Leu Leu Ala Val Ser Pro Gly Met Met Arg Gly Asp Ala Gln Asp	
50 55 60	
Val Gln Leu Asn Ile Gly Pro Asn Cys Lys Leu Arg Ile Thr Ser Gln	
65 70 75 80	
Ser Phe Glu Lys Ile His Asn Thr Glu Asp Gly Phe Ala Ser Arg Asp	
85 90 95	
Met His Ile Val Val Gly Glu Asn Ala Phe Leu Asp Phe Ala Pro Phe	
100 105 110	
Pro Leu Ile Pro Phe Glu Asn Ala His Phe Lys Gly Asn Thr Thr Ile	
115 120 125	
Ser Leu Arg Ser Ser Ser Gln Leu Leu Tyr Ser Glu Ile Ile Val Ala	
130 135 140	
Gly Arg Val Ala Arg Asn Glu Leu Phe Lys Phe Asn Arg Leu His Thr	
145 150 155 160	
Lys Ile Ser Ile Leu Gln Asp Glu Lys Pro Ile Tyr Tyr Asp Asn Thr	
165 170 175	
Ile Leu Asp Pro Lys Thr Thr Asp Leu Asn Asn Met Cys Met Phe Asp	
180 185 190	
Gly Tyr Thr His Tyr Leu Asn Leu Val Leu Val Asn Cys Pro Ile Glu	
195 200 205	
Leu Ser Gly Val Arg Glu Cys Ile Glu Glu Ser Glu Gly Val Asp Gly	

210	215	220
Ala Val Ser Glu Thr	Ala Ser Ser His Leu Cys	Val Lys Ala Leu Ala
225	230	235
Lys Gly Ser Glu Pro	Leu Leu His Leu Arg	Glu Lys Ile Ala Arg Leu
	245	250
Val Thr Gln Thr	Thr Thr Gln Lys Val	
260	265	

<210> 251
 <211> 1815
 <212> DNA
 <213> *Helicobacter pylori*

<220>
 <221> CDS
 <222> (51)...(1757)

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	Met Lys
	1
aag att agc aga aaa gaa tat gtt tct atg tat ggc cct act aca ggc	104
Lys Ile Ser Arg Lys Glu Tyr Val Ser Met Tyr Gly Pro Thr Thr Gly	
5 10 15	
gat aaa gtg aga ttg ggc gat aca gac ttg atc gct gaa gta gaa cat	152
Asp Lys Val Arg Leu Gly Asp Thr Asp Leu Ile Ala Glu Val Glu His	
20 25 30	
gac tac acc att tat ggc gaa gag ctt aaa ttc ggt ggc ggt aaa acc	200
Asp Tyr Thr Ile Tyr Gly Glu Glu Leu Lys Phe Gly Gly Gly Lys Thr	
35 40 45 50	
ctg aga gaa ggc atg agc caa tcc aac aac cct agc aaa gaa gaa ttg	248
Leu Arg Glu Gly Met Ser Gln Ser Asn Asn Pro Ser Lys Glu Glu Leu	
55 60 65	
gat cta atc atc act aac gct tta atc gtg gat tac acc ggt att tat	296
Asp Leu Ile Ile Thr Asn Ala Leu Ile Val Asp Tyr Thr Gly Ile Tyr	
70 75 80	
aaa gcg gat att ggt att aaa gat ggc aaa atc gct ggc att ggt aaa	344
Lys Ala Asp Ile Gly Ile Lys Asp Gly Lys Ile Ala Gly Ile Gly Lys	
85 90 95	
ggc ggt aac aaa gac atg caa gat ggc gtt aaa aac aat ctt agc gta	392
Gly Gly Asn Lys Asp Met Gln Asp Gly Val Lys Asn Asn Leu Ser Val	
100 105 110	
ggt cct gct act gaa gcc tta gcc ggt gaa ggt ttg atc gta act gct	440
Gly Pro Ala Thr Glu Ala Leu Ala Gly Glu Gly Leu Ile Val Thr Ala	
115 120 125 130	

ggt ggt att gac aca cac atc cac ttc att tca ccc caa caa atc cct	488
Gly Gly Ile Asp Thr His Ile His Phe Ile Ser Pro Gln Gln Ile Pro	
135 140 145	
aca gct ttt gca agc ggt gta aca acc atg att ggt ggc gga act ggt	536
Thr Ala Phe Ala Ser Gly Val Thr Thr Met Ile Gly Gly Gly Thr Gly	
150 155 160	
cct gct gat ggc act aat gcg act act atc act cca ggc aga aga aat	584
Pro Ala Asp Gly Thr Asn Ala Thr Thr Ile Thr Pro Gly Arg Arg Asn	
165 170 175	
tta aaa tgg atg ctc aga gcg gct gaa gaa tat tct atg aac tta ggt	632
Leu Lys Trp Met Leu Arg Ala Ala Glu Glu Tyr Ser Met Asn Leu Gly	
180 185 190	
ttc ttg gct aaa ggt aac gct tct aac gac gcg agc tta gcc gat caa	680
Phe Leu Ala Lys Gly Asn Ala Ser Asn Asp Ala Ser Leu Ala Asp Gln	
195 200 205 210	
att gaa gct ggt gcg att ggc ttt aaa atc cac gaa gac tgg ggc acc	728
Ile Glu Ala Gly Ala Ile Gly Phe Lys Ile His Glu Asp Trp Gly Thr	
215 220 225	
act cct tct gca atc aat cat gcg tta gat gtt gca gac aaa tac gat	776
Thr Pro Ser Ala Ile Asn His Ala Leu Asp Val Ala Asp Lys Tyr Asp	
230 235 240	
gtg caa gtc gct atc cac aca gac act ttg aat gaa gcc ggt tgc gtg	824
Val Gln Val Ala Ile His Thr Asp Thr Leu Asn Glu Ala Gly Cys Val	
245 250 255	
gaa gac act atg gca gct att gcc gga cgc act atg cac act ttc cac	872
Glu Asp Thr Met Ala Ala Ile Ala Gly Arg Thr Met His Thr Phe His	
260 265 270	
act gaa ggt gct ggc ggc gga cac gct cct gat att att aaa gta gct	920
Thr Glu Gly Ala Gly Gly Gly His Ala Pro Asp Ile Ile Lys Val Ala	
275 280 285 290	
ggt gaa cac aac att ctt ccc gct tcc act aac ccc act atc cct ttc	968
Gly Glu His Asn Ile Leu Pro Ala Ser Thr Asn Pro Thr Ile Pro Phe	
295 300 305	
act gtg aat aca gaa gca gaa cac atg gac atg ctt atg gtg tgc cac	1016
Thr Val Asn Thr Glu Ala Glu His Met Asp Met Leu Met Val Cys His	
310 315 320	
cac ttg gat aaa agc att aaa gaa gat gtt cag ttc gct gat tca agg	1064
His Leu Asp Lys Ser Ile Lys Glu Asp Val Gln Phe Ala Asp Ser Arg	
325 330 335	
atc cgc cct caa acc att gcg gct gaa gac act ttg cat gac atg ggg	1112
Ile Arg Pro Gln Thr Ile Ala Ala Glu Asp Thr Leu His Asp Met Gly	
340 345 350	

att ttc tca atc acc agc tct gac tct caa gct atg ggt cgt gtg ggt	1160
Ile Phe Ser Ile Thr Ser Ser Asp Ser Gln Ala Met Gly Arg Val Gly	
355 360 365 370	
gaa gtt atc act aga act tgg caa aca gct gac aaa aac aaa aaa gaa	1208
Glu Val Ile Thr Arg Thr Trp Gln Thr Ala Asp Lys Asn Lys Lys Glu	
375 380 385	
ttt ggc cgc ttg aaa gaa gaa aaa ggc gat aac gac aac ttc agg atc	1256
Phe Gly Arg Leu Lys Glu Glu Lys Gly Asp Asn Asp Asn Phe Arg Ile	
390 395 400	
aaa cgc tac ttg tct aaa tac acc att aac cca gcg atc gct cat ggg	1304
Lys Arg Tyr Leu Ser Lys Tyr Thr Ile Asn Pro Ala Ile Ala His Gly	
405 410 415	
att agc gag tat gta ggt tct gta gaa gtg ggc aaa gtg gct gac ttg	1352
Ile Ser Glu Tyr Val Gly Ser Val Glu Val Gly Lys Val Ala Asp Leu	
420 425 430	
gta ttg tgg agt ccc gca ttc ttt ggc gta aaa ccc aac atg atc atc	1400
Val Leu Trp Ser Pro Ala Phe Phe Gly Val Lys Pro Asn Met Ile Ile	
435 440 445 450	
aaa ggc ggg ttc att gcg ttg agt caa atg ggt gac gcg aac gct tct	1448
Lys Gly Gly Phe Ile Ala Leu Ser Gln Met Gly Asp Ala Asn Ala Ser	
455 460 465	
atc cct acc cca caa cca gtt tat tac aga gaa atg ttc gct cat cat	1496
Ile Pro Thr Pro Gln Pro Val Tyr Tyr Arg Glu Met Phe Ala His His	
470 475 480	
ggg aaa gcc aaa tac gat gca aac atc act ttt gtg tct caa gcg gct	1544
Gly Lys Ala Lys Tyr Asp Ala Asn Ile Thr Phe Val Ser Gln Ala Ala	
485 490 495	
tat gac aaa ggc att aaa gaa gaa tta ggg ctt gaa aga caa gtg ttg	1592
Tyr Asp Lys Gly Ile Lys Glu Glu Leu Gly Leu Glu Arg Gln Val Leu	
500 505 510	
ccg gta aaa aat tgc aga aac atc act aaa aaa gac atg caa ttc aac	1640
Pro Val Lys Asn Cys Arg Asn Ile Thr Lys Lys Asp Met Gln Phe Asn	
515 520 525 530	
gac act acc gct cac att gaa gtc aat cct gaa act tac cat gtg ttc	1688
Asp Thr Thr Ala His Ile Glu Val Asn Pro Glu Thr Tyr His Val Phe	
535 540 545	
gtg gat ggc aaa gaa gta act tct aaa cca gcc aat aaa gtg agc ttg	1736
Val Asp Gly Lys Glu Val Thr Ser Lys Pro Ala Asn Lys Val Ser Leu	
550 555 560	
gcg caa ctc ttt agc att ttc taggattttt taggagcaac gctccttaaa	1787
Ala Gln Leu Phe Ser Ile Phe	

tccttagttt ttagctctct gatttttt

1815

<210> 252

<211> 569

<212> PRT

<213> Helicobacter pylori

<400> 252

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 20 25 30
 Glu His Asp Tyr Thr Ile Tyr Gly Glu Glu Leu Lys Phe Gly Gly Gly
 35 40 45
 Lys Thr Leu Arg Glu Gly Met Ser Gln Ser Asn Asn Pro Ser Lys Glu
 50 55 60
 Glu Leu Asp Leu Ile Ile Thr Asn Ala Leu Ile Val Asp Tyr Thr Gly
 65 70 75 80
 Ile Tyr Lys Ala Asp Ile Gly Ile Lys Asp Gly Lys Ile Ala Gly Ile
 85 90 95
 Gly Lys Gly Gly Asn Lys Asp Met Gln Asp Gly Val Lys Asn Asn Leu
 100 105 110
 Ser Val Gly Pro Ala Thr Glu Ala Leu Ala Gly Glu Gly Leu Ile Val
 115 120 125
 Thr Ala Gly Gly Ile Asp Thr His Ile His Phe Ile Ser Pro Gln Gln
 130 135 140
 Ile Pro Thr Ala Phe Ala Ser Gly Val Thr Thr Met Ile Gly Gly Gly
 145 150 155 160
 Thr Gly Pro Ala Asp Gly Thr Asn Ala Thr Thr Ile Thr Pro Gly Arg
 165 170 175
 Arg Asn Leu Lys Trp Met Leu Arg Ala Ala Glu Glu Tyr Ser Met Asn
 180 185 190
 Leu Gly Phe Leu Ala Lys Gly Asn Ala Ser Asn Asp Ala Ser Leu Ala
 195 200 205
 Asp Gln Ile Glu Ala Gly Ala Ile Gly Phe Lys Ile His Glu Asp Trp
 210 215 220
 Gly Thr Thr Pro Ser Ala Ile Asn His Ala Leu Asp Val Ala Asp Lys
 225 230 235 240
 Tyr Asp Val Gln Val Ala Ile His Thr Asp Thr Leu Asn Glu Ala Gly
 245 250 255
 Cys Val Glu Asp Thr Met Ala Ala Ile Ala Gly Arg Thr Met His Thr
 260 265 270
 Phe His Thr Glu Gly Ala Gly Gly His Ala Pro Asp Ile Ile Lys
 275 280 285
 Val Ala Gly Glu His Asn Ile Leu Pro Ala Ser Thr Asn Pro Thr Ile
 290 295 300
 Pro Phe Thr Val Asn Thr Glu Ala Glu His Met Asp Met Leu Met Val
 305 310 315 320
 Cys His His Leu Asp Lys Ser Ile Lys Glu Asp Val Gln Phe Ala Asp
 325 330 335
 Ser Arg Ile Arg Pro Gln Thr Ile Ala Ala Glu Asp Thr Leu His Asp
 340 345 350
 Met Gly Ile Phe Ser Ile Thr Ser Ser Asp Ser Gln Ala Met Gly Arg

tct aat gac ggc tta agc ata cag agc ggt aaa atc gtg agc gtc aat	248
Ser Asn Asp Gly Leu Ser Ile Gln Ser Gly Lys Ile Val Ser Val Asn	
55 60 65	
aaa ggc gat tgg gat aaa gaa gat ggg att aat ggt att gat gag ttt	296
Lys Gly Asp Trp Asp Lys Glu Asp Gly Ile Asn Gly Ile Asp Glu Phe	
70 75 80	
aat tac cag tgg ata aac aac gct aaa aag gct tta aaa gac aca gga	344
Asn Tyr Gln Trp Ile Asn Asn Ala Lys Lys Ala Leu Lys Asp Thr Gly	
85 90 95	
agc ctt tta atc agc ggg act tac cac aac atc ttt tct ttg ggg tgt	392
Ser Leu Leu Ile Ser Gly Thr Tyr His Asn Ile Phe Ser Leu Gly Cys	
100 105 110	
gtt tta caa aaa ttg gat ttt aag att tta aac ctc atc acc tgg caa	440
Val Leu Gln Lys Leu Asp Phe Lys Ile Leu Asn Leu Ile Thr Trp Gln	
115 120 125 130	
aaa acc aac cct cct ccc aat ttc agc tgc cgt tat ttg acg cat tca	488
Lys Thr Asn Pro Pro Pro Asn Phe Ser Cys Arg Tyr Leu Thr His Ser	
135 140 145	
gct gag caa atc att tgg gcg aga aaa agc cgc aaa cac aag cat gtt	536
Ala Glu Gln Ile Ile Trp Ala Arg Lys Ser Arg Lys His Lys His Val	
150 155 160	
ttt aac tat gag gtt tta aaa aag atc aat aac gac aag caa atg cgc	584
Phe Asn Tyr Glu Val Leu Lys Lys Ile Asn Asn Asp Lys Gln Met Arg	
165 170 175	
gat gtg tgg agc ttc cca gcg atc gct cct tgg gaa aaa gtt aat ggc	632
Asp Val Trp Ser Phe Pro Ala Ile Ala Pro Trp Glu Lys Val Asn Gly	
180 185 190	
aag cac ccc act caa aaa ccc ctc gct tta tta gtg cgc ttg ctt tta	680
Lys His Pro Thr Gln Lys Pro Leu Ala Leu Leu Val Arg Leu Leu Leu	
195 200 205 210	
atg gcg agc gat gaa aat tct ctc att ggc gat cct ttt agc ggg agc	728
Met Ala Ser Asp Glu Asn Ser Leu Ile Gly Asp Pro Phe Ser Gly Ser	
215 220 225	
tct acc aca ggc att gcg gct aat ctt ttg aag agg gaa ttt att ggc	776
Ser Thr Thr Gly Ile Ala Ala Asn Leu Leu Lys Arg Glu Phe Ile Gly	
230 235 240	
ata gaa aaa gaa agc gag ttt atc aaa ata tcc atg gat aga aaa ata	824
Ile Glu Lys Glu Ser Glu Phe Ile Lys Ile Ser Met Asp Arg Lys Ile	
245 250 255	
gaa tta gac gct cgc tat aaa gaa atc cga tct aaa atc aaa gat tta	872
Glu Leu Asp Ala Arg Tyr Lys Glu Ile Arg Ser Lys Ile Lys Asp Leu	
260 265 270	

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 Asn His Gln
 275

921

ggattttacc tca

934

<210> 254
 <211> 277
 <212> PRT
 <213> Helicobacter pylori

<400> 254
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 Pro Gln Phe Glu Asn Gln Phe Asp Leu Ile Phe Ala Asp Pro Pro Tyr
 35 40 45
 Phe Leu Ser Asn Asp Gly Leu Ser Ile Gln Ser Gly Lys Ile Val Ser
 50 55 60
 Val Asn Lys Gly Asp Trp Asp Lys Glu Asp Gly Ile Asn Gly Ile Asp
 65 70 75 80
 Glu Phe Asn Tyr Gln Trp Ile Asn Asn Ala Lys Lys Ala Leu Lys Asp
 85 90 95
 Thr Gly Ser Leu Leu Ile Ser Gly Thr Tyr His Asn Ile Phe Ser Leu
 100 105 110
 Gly Cys Val Leu Gln Lys Leu Asp Phe Lys Ile Leu Asn Leu Ile Thr
 115 120 125
 Trp Gln Lys Thr Asn Pro Pro Asn Phe Ser Cys Arg Tyr Leu Thr
 130 135 140
 His Ser Ala Glu Gln Ile Ile Trp Ala Arg Lys Ser Arg Lys His Lys
 145 150 155 160
 His Val Phe Asn Tyr Glu Val Leu Lys Lys Ile Asn Asn Asp Lys Gln
 165 170 175
 Met Arg Asp Val Trp Ser Phe Pro Ala Ile Ala Pro Trp Glu Lys Val
 180 185 190
 Asn Gly Lys His Pro Thr Gln Lys Pro Leu Ala Leu Leu Val Arg Leu
 195 200 205
 Leu Leu Met Ala Ser Asp Glu Asn Ser Leu Ile Gly Asp Pro Phe Ser
 210 215 220
 Gly Ser Ser Thr Thr Gly Ile Ala Ala Asn Leu Leu Lys Arg Glu Phe
 225 230 235 240
 Ile Gly Ile Glu Lys Glu Ser Glu Phe Ile Lys Ile Ser Met Asp Arg
 245 250 255
 Lys Ile Glu Leu Asp Ala Arg Tyr Lys Glu Ile Arg Ser Lys Ile Lys
 260 265 270
 Asp Leu Asn His Gln
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 <211> 646
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (259)...(588)

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 aaagaggaag aatatcagtg caagctttct ttgatttttag ccgctaaaaa cagcgtgttt 180
 gtgcatataa gaagagggga ttatgtgggg attggctgtc agcttggtat tgactatcaa 240
 aaaaaggcgc ttgagtat atg gca aag cgc gtg cca aac atg gag ctt ttt 291
 Met Ala Lys Arg Val Pro Asn Met Glu Leu Phe
 1 5 10

gtg ttt tgc gaa gac tta gaa ttc acg caa aat ctt gat ctt ggc tac 339
 Val Phe Cys Glu Asp Leu Glu Phe Thr Gln Asn Leu Asp Leu Gly Tyr
 15 20 25

cct ttt atg gac atg acc act agg gat aaa gaa gaa gag gcg tat tgg 387
 Pro Phe Met Asp Met Thr Thr Arg Asp Lys Glu Glu Glu Ala Tyr Trp
 30 35 40

gac atg ctg ctc atg caa tct tgt cag cat ggc att atc gct aat agc 435
 Asp Met Leu Leu Met Gln Ser Cys Gln His Gly Ile Ile Ala Asn Ser
 45 50 55

act tat agc tgg tgg gcg gcc tat ttg ata gaa aat cca gaa aaa atc 483
 Thr Tyr Ser Trp Trp Ala Ala Tyr Leu Ile Glu Asn Pro Glu Lys Ile
 60 65 70 75

att att ggc ccc aaa cac tgg ctt ttt ggg cat gag aat atc ctt tgt 531
 Ile Ile Gly Pro Lys His Trp Leu Phe Gly His Glu Asn Ile Leu Cys
 80 85 90

aag gag tgg gtg aaa ata gaa tcc cat ttt gag gta aaa tcc caa aag 579
 Lys Glu Trp Val Lys Ile Glu Ser His Phe Glu Val Lys Ser Gln Lys
 95 100 105

tat aac gct taaagtggct taaaaaaagg ctttattggt gggttaaadc 628
 Tyr Asn Ala
 110

tttgatttta gatcggat 646

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 <212> PRT
 <213> Helicobacter pylori

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 20 25 30
 Thr Thr Arg Asp Lys Glu Glu Glu Ala Tyr Trp Asp Met Leu Leu Met
 35 40 45

atc gtt aaa ttt tct tta gac gct att gat ttg aaa gcc ttt gaa aga	488
Ile Val Lys Phe Ser Leu Asp Ala Ile Asp Leu Lys Ala Phe Glu Arg	
135 140 145	
gtg gat aaa ccc tat tct aaa gac att aat aag att tta gag ggg att	536
Val Asp Lys Pro Tyr Ser Lys Asp Ile Asn Lys Ile Leu Glu Gly Ile	
150 155 160	
ttg cgc ttt tct caa att tat caa ggg caa ttg gtg gct gaa gtg ttg	584
Leu Arg Phe Ser Gln Ile Tyr Gln Gly Gln Leu Val Ala Glu Val Leu	
165 170 175	
tta att aag ggc gtg aat gat agc gcg aac aac tta aaa ctc atc gct	632
Leu Ile Lys Gly Val Asn Asp Ser Ala Asn Asn Leu Lys Leu Ile Ala	
180 185 190	
gcc ttt tta aaa caa atc aat ata gcc aga gtg gat tta agc acc ata	680
Ala Phe Leu Lys Gln Ile Asn Ile Ala Arg Val Asp Leu Ser Thr Ile	
195 200 205 210	
gac aga ccc tca agc ttt aaa gcc cct aaa tta agc gaa gat gaa ttg	728
Asp Arg Pro Ser Ser Phe Lys Ala Pro Lys Leu Ser Glu Asp Glu Leu	
215 220 225	
tta aaa tgc tct tta ttt ttt gaa ggg ctt tgc gtg agt ttg cct aaa	776
Leu Lys Cys Ser Leu Phe Phe Glu Gly Leu Cys Val Ser Leu Pro Lys	
230 235 240	
cga tcc att act caa gct aaa aaa ttg att tct tgc ggt ata gac gaa	824
Arg Ser Ile Thr Gln Ala Lys Lys Leu Ile Ser Cys Gly Ile Asp Glu	
245 250 255	
ttg ctc gct tta att tcc agg cgc cct tta agc gca gaa gaa gcc ccc	872
Leu Leu Ala Leu Ile Ser Arg Arg Pro Leu Ser Ala Glu Glu Ala Pro	
260 265 270	
cta att cta gat tct aac gct ttt aag cat tta gaa act ttg tta aac	920
Leu Ile Leu Asp Ser Asn Ala Phe Lys His Leu Glu Thr Leu Leu Asn	
275 280 285 290	
cat aag caa att acg att aaa aaa gtc ggc tct ttg gag ttt tat tgc	968
His Lys Gln Ile Thr Ile Lys Lys Val Gly Ser Leu Glu Phe Tyr Cys	
295 300 305	
gcg ttt taacctccat ttgtaagttt taccttactt tagggatagc ttaagctttt	1024
Ala Phe	
aaa	1027
<210> 258	
<211> 308	
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20 25 30
Cys Asn Tyr Asn Cys Ile Tyr Cys Glu Leu Gly Lys Ala Lys Pro Ile
35 40 45
Glu Arg Met Glu Glu Val Ile Lys Val Glu Thr Leu Ile Asn Ala Ile
50 55 60
Gln Asn Ala Leu Asn Asn Leu Thr Thr Pro Ile Asp Val Leu Thr Ile
65 70 75 80
Thr Ala Asn Gly Glu Pro Thr Leu Tyr Pro His Leu Leu Glu Leu Ile
85 90 95
Gln Ser Ile Lys Pro Phe Leu Lys Gly Val Lys Thr Leu Ile Leu Ser
100 105 110
Asn Gly Ser Leu Phe Tyr Glu Pro Lys Val Gln Gln Ala Leu Lys Glu
115 120 125
Phe Asp Ile Val Lys Phe Ser Leu Asp Ala Ile Asp Leu Lys Ala Phe
130 135 140
Glu Arg Val Asp Lys Pro Tyr Ser Lys Asp Ile Asn Lys Ile Leu Glu
145 150 155 160
Gly Ile Leu Arg Phe Ser Gln Ile Tyr Gln Gly Gln Leu Val Ala Glu
165 170 175
Val Leu Leu Ile Lys Gly Val Asn Asp Ser Ala Asn Asn Leu Lys Leu
180 185 190
Ile Ala Ala Phe Leu Lys Gln Ile Asn Ile Ala Arg Val Asp Leu Ser
195 200 205
Thr Ile Asp Arg Pro Ser Ser Phe Lys Ala Pro Lys Leu Ser Glu Asp
210 215 220
Glu Leu Leu Lys Cys Ser Leu Phe Phe Glu Gly Leu Cys Val Ser Leu
225 230 235 240
Pro Lys Arg Ser Ile Thr Gln Ala Lys Lys Leu Ile Ser Cys Gly Ile
245 250 255
Asp Glu Leu Leu Ala Leu Ile Ser Arg Arg Pro Leu Ser Ala Glu Glu
260 265 270
Ala Pro Leu Ile Leu Asp Ser Asn Ala Phe Lys His Leu Glu Thr Leu
275 280 285
Leu Asn His Lys Gln Ile Thr Ile Lys Lys Val Gly Ser Leu Glu Phe
290 295 300
Tyr Cys Ala Phe
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<210> 259
<211> 1350
<212> DNA
<213> *Helicobacter pylori*

<220>
<221> CDS
<222> (87)...(1280)

<400> 259
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gattgttttt taaaaaaagg ttggta atg gaa tca gta aaa aca gga aaa aca 113

	Met	Glu	Ser	Val	Lys	Thr	Gly	Lys	Thr	
	1				5					
aat aag gtt ggc aag aat aca gag atg gct aat aca aag gca aat aaa	161									
Asn Lys Val Gly Lys Asn Thr Glu Met Ala Asn Thr Lys Ala Asn Lys										
10 15 20 25										
gag act cat ttt aaa caa gtg agc gcc att aca aat ata atc aga tca	209									
Glu Thr His Phe Lys Gln Val Ser Ala Ile Thr Asn Ile Ile Arg Ser										
30 35 40										
gtt ggt ggg ttt ttt aca aaa att gca aag aga gtt aga gga ctt gta	257									
Val Gly Gly Phe Phe Thr Lys Ile Ala Lys Arg Val Arg Gly Leu Val										
45 50 55										
aaa aaa cac ccc aag aaa agc agt gcg gca tta gta gta ttg acc cat	305									
Lys Lys His Pro Lys Lys Ser Ser Ala Ala Leu Val Val Leu Thr His										
60 65 70										
att gcg tgc aag aaa gcg aaa gaa tta gac gat aaa gtc caa gat aaa	353									
Ile Ala Cys Lys Lys Ala Lys Glu Leu Asp Asp Lys Val Gln Asp Lys										
75 80 85										
tcc aaa caa gct gaa aaa gaa aat caa atc aat tgg tgg aaa tat tca	401									
Ser Lys Gln Ala Glu Lys Glu Asn Gln Ile Asn Trp Trp Lys Tyr Ser										
90 95 100 105										
gga tta aca ata gcg gca agt tta tta tta gcc gct tgt agc gct ggt	449									
Gly Leu Thr Ile Ala Ala Ser Leu Leu Ala Ala Cys Ser Ala Gly										
110 115 120										
gat act gat aaa cag ata gaa cta gaa caa gaa aaa aag gaa gct gaa	497									
Asp Thr Asp Lys Gln Ile Glu Leu Glu Gln Glu Lys Lys Glu Ala Glu										
125 130 135										
aac gct agg gat aga gcg aac aag agt ggg ata gaa cta gaa caa gaa	545									
Asn Ala Arg Asp Arg Ala Asn Lys Ser Gly Ile Glu Leu Glu Gln Glu										
140 145 150										
aga cag aaa aca aac aag agt ggg ata gaa ctc gct aat agt caa ata	593									
Arg Gln Lys Thr Asn Lys Ser Gly Ile Glu Leu Ala Asn Ser Gln Ile										
155 160 165										
aaa gca gaa caa gaa aga caa aag aca gaa caa gaa aaa caa aaa gca	641									
Lys Ala Glu Gln Glu Arg Gln Lys Thr Glu Gln Glu Lys Gln Lys Ala										
170 175 180 185										
aat aag agt gcg ata gag tta gaa cag caa aaa caa aag acc att aat	689									
Asn Lys Ser Ala Ile Glu Leu Glu Gln Gln Lys Gln Lys Thr Ile Asn										
190 195 200										
aca caa aga gat ttg att aaa gaa cag aaa gat ttc att aaa gaa aca	737									
Thr Gln Arg Asp Leu Ile Lys Glu Gln Lys Asp Phe Ile Lys Glu Thr										
205 210 215										

gaa caa aat tgc caa gaa aat cat aat caa ttc ttt att aaa aaa tta	785
Glu Gln Asn Cys Gln Glu Asn His Asn Gln Phe Phe Ile Lys Lys Leu	
220 225 230	
gga att aag ggt ggc att gct ata gaa gta gaa gct gaa tgc aaa acc	833
Gly Ile Lys Gly Gly Ile Ala Ile Glu Val Glu Ala Glu Cys Lys Thr	
235 240 245	
cct aaa cct gca aaa acc aat caa acc cct atc cag cca aaa cac ctc	881
Pro Lys Pro Ala Lys Thr Asn Gln Thr Pro Ile Gln Pro Lys His Leu	
250 255 260 265	
cca aac tct aaa caa cct cat tct caa aga gga tca aaa gcg caa gag	929
Pro Asn Ser Lys Gln Pro His Ser Gln Arg Gly Ser Lys Ala Gln Glu	
270 275 280	
ttt atc gct tat ttg caa aaa gag cta gaa ttt ctg ccc tat tcg caa	977
Phe Ile Ala Tyr Leu Gln Lys Glu Leu Glu Phe Leu Pro Tyr Ser Gln	
285 290 295	
aaa gct atc gct aaa caa gtg aat ttc tat aaa cca agt tct atc gct	1025
Lys Ala Ile Ala Lys Gln Val Asn Phe Tyr Lys Pro Ser Ser Ile Ala	
300 305 310	
tat tta gaa cta gat cct aga gat ttt aag gtt aca gaa gaa tgg caa	1073
Tyr Leu Glu Leu Asp Pro Arg Asp Phe Lys Val Thr Glu Glu Trp Gln	
315 320 325	
aaa gaa aat cta aaa ata cgc tct aaa gct caa gct aaa atg ctt gaa	1121
Lys Glu Asn Leu Lys Ile Arg Ser Lys Ala Gln Ala Lys Met Leu Glu	
330 335 340 345	
atg agg gat tta aaa cca gac cca caa gcc cac ctt cca acc tct caa	1169
Met Arg Asp Leu Lys Pro Asp Pro Gln Ala His Leu Pro Thr Ser Gln	
350 355 360	
agc ctt ttg ttc gtt caa aaa ata ttt gct gat gtt aat aaa gaa ata	1217
Ser Leu Leu Phe Val Gln Lys Ile Phe Ala Asp Val Asn Lys Glu Ile	
365 370 375	
gaa gca gtt gct aat act gaa aag aaa gca gaa aaa gcg ggt tat ggt	1265
Glu Ala Val Ala Asn Thr Glu Lys Lys Ala Glu Lys Ala Gly Tyr Gly	
380 385 390	
tat agt aaa agg atg taggcataag aaaataagaa caccataaaa tcgttttttag	1320
Tyr Ser Lys Arg Met	
395	
cttctaggag acatcagtcg gtttcttgcc	1350
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<211> 398	
<212> PRT	
<213> Helicobacter pylori	

<400> 260

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			20					25					30		
Ser	Ala	Ile	Thr	Asn	Ile	Ile	Arg	Ser	Val	Gly	Gly	Phe	Phe	Thr	Lys
		35					40					45			
Ile	Ala	Lys	Arg	Val	Arg	Gly	Leu	Val	Lys	Lys	His	Pro	Lys	Lys	Ser
	50					55					60				
Ser	Ala	Ala	Leu	Val	Val	Leu	Thr	His	Ile	Ala	Cys	Lys	Lys	Ala	Lys
65					70					75					80
Glu	Leu	Asp	Asp	Lys	Val	Gln	Asp	Lys	Ser	Lys	Gln	Ala	Glu	Lys	Glu
				85					90					95	
Asn	Gln	Ile	Asn	Trp	Trp	Lys	Tyr	Ser	Gly	Leu	Thr	Ile	Ala	Ala	Ser
			100					105						110	
Leu	Leu	Leu	Ala	Ala	Cys	Ser	Ala	Gly	Asp	Thr	Asp	Lys	Gln	Ile	Glu
		115						120				125			
Leu	Glu	Gln	Glu	Lys	Lys	Glu	Ala	Glu	Asn	Ala	Arg	Asp	Arg	Ala	Asn
	130					135					140				
Lys	Ser	Gly	Ile	Glu	Leu	Glu	Gln	Glu	Arg	Gln	Lys	Thr	Asn	Lys	Ser
145					150					155					160
Gly	Ile	Glu	Leu	Ala	Asn	Ser	Gln	Ile	Lys	Ala	Glu	Gln	Glu	Arg	Gln
				165					170					175	
Lys	Thr	Glu	Gln	Glu	Lys	Gln	Lys	Ala	Asn	Lys	Ser	Ala	Ile	Glu	Leu
			180					185						190	
Glu	Gln	Gln	Lys	Gln	Lys	Thr	Ile	Asn	Thr	Gln	Arg	Asp	Leu	Ile	Lys
		195					200					205			
Glu	Gln	Lys	Asp	Phe	Ile	Lys	Glu	Thr	Glu	Gln	Asn	Cys	Gln	Glu	Asn
	210					215					220				
His	Asn	Gln	Phe	Phe	Ile	Lys	Lys	Leu	Gly	Ile	Lys	Gly	Gly	Ile	Ala
225					230					235					240
Ile	Glu	Val	Glu	Ala	Glu	Cys	Lys	Thr	Pro	Lys	Pro	Ala	Lys	Thr	Asn
				245					250					255	
Gln	Thr	Pro	Ile	Gln	Pro	Lys	His	Leu	Pro	Asn	Ser	Lys	Gln	Pro	His
			260					265						270	
Ser	Gln	Arg	Gly	Ser	Lys	Ala	Gln	Glu	Phe	Ile	Ala	Tyr	Leu	Gln	Lys
		275				280					285				
Glu	Leu	Glu	Phe	Leu	Pro	Tyr	Ser	Gln	Lys	Ala	Ile	Ala	Lys	Gln	Val
	290					295					300				
Asn	Phe	Tyr	Lys	Pro	Ser	Ser	Ile	Ala	Tyr	Leu	Glu	Leu	Asp	Pro	Arg
305					310					315					320
Asp	Phe	Lys	Val	Thr	Glu	Glu	Trp	Gln	Lys	Glu	Asn	Leu	Lys	Ile	Arg
				325					330					335	
Ser	Lys	Ala	Gln	Ala	Lys	Met	Leu	Glu	Met	Arg	Asp	Leu	Lys	Pro	Asp
			340					345					350		
Pro	Gln	Ala	His	Leu	Pro	Thr	Ser	Gln	Ser	Leu	Leu	Phe	Val	Gln	Lys
		355					360					365			
Ile	Phe	Ala	Asp	Val	Asn	Lys	Glu	Ile	Glu	Ala	Val	Ala	Asn	Thr	Glu
	370					375					380				
Lys	Lys	Ala	Glu	Lys	Ala	Gly	Tyr	Gly	Tyr	Ser	Lys	Arg	Met		
385					390					395					

<210> 261

<211> 1939

<212> DNA

<213> Helicobacter pylori

<220>

<221> CDS

<222> (51)...(1886)

<400> 261

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                                                Met Ser
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gcg gaa ctg att gct gtt tat aaa gac gag caa ata ata gat tta gag      104
Ala Glu Leu Ile Ala Val Tyr Lys Asp Glu Gln Ile Ile Asp Leu Glu
      5                      10                      15

agc gcg aaa gtc tta ggg ctg agc gat ggg att aaa gcg tta aac ggg      152
Ser Ala Lys Val Leu Gly Leu Ser Asp Gly Ile Lys Ala Leu Asn Gly
      20                      25                      30

aca gag ccg ata tat ttt gat gat tcg cct ttg gct tta gag gtg att      200
Thr Glu Pro Ile Tyr Phe Asp Asp Ser Pro Leu Ala Leu Glu Val Ile
      35                      40                      45                      50

agg cat tca tgc gcg cat ttg ctt gcg caa agc ttg aaa gcc ctt tat      248
Arg His Ser Cys Ala His Leu Leu Ala Gln Ser Leu Lys Ala Leu Tyr
      55                      60                      65

ccg gac gcg aaa ttt ttt gta ggc cct gtg gta gaa gag ggg ttt tat      296
Pro Asp Ala Lys Phe Phe Val Gly Pro Val Val Glu Glu Gly Phe Tyr
      70                      75                      80

tac gat ttc aag act tct tca aaa atc agc gaa gag gat ttg cct aaa      344
Tyr Asp Phe Lys Thr Ser Ser Lys Ile Ser Glu Glu Asp Leu Pro Lys
      85                      90                      95

att gaa gcg aaa atg aaa gag ttt gcg aag ttg aaa ctc gct atc act      392
Ile Glu Ala Lys Met Lys Glu Phe Ala Lys Leu Lys Leu Ala Ile Thr
      100                      105                      110

aaa gag act tta acc aga gag caa gct ttg gag cgt ttt aag ggc gat      440
Lys Glu Thr Leu Thr Arg Glu Gln Ala Leu Glu Arg Phe Lys Gly Asp
      115                      120                      125                      130

gaa tta aag cat gcg gtg atg agt aaa atc ggt ggc gat gcc ttt ggc      488
Glu Leu Lys His Ala Val Met Ser Lys Ile Gly Gly Asp Ala Phe Gly
      135                      140                      145

gtg tat caa caa ggc gag ttt gaa gat ttg tgt aag ggg ccg cat ctc      536
Val Tyr Gln Gln Gly Glu Phe Glu Asp Leu Cys Lys Gly Pro His Leu
      150                      155                      160

cca aac acc cgt ttt tta aac cat ttt aag ctc act aaa ctg gct ggg      584
Pro Asn Thr Arg Phe Leu Asn His Phe Lys Leu Thr Lys Leu Ala Gly
      165                      170                      175
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gct tat ttg ggc ggc gat gaa aac aat gaa atg ctc att aga atc tat	632
Ala Tyr Leu Gly Gly Asp Glu Asn Asn Glu Met Leu Ile Arg Ile Tyr	
180 185 190	
gga atc gct ttt gcc acc aaa gag ggt tta aaa gac tat ctt ttc caa	680
Gly Ile Ala Phe Ala Thr Lys Glu Gly Leu Lys Asp Tyr Leu Phe Gln	
195 200 205 210	
ata gaa gaa gcg aaa aaa cga gat cac aga aag cta ggc gtg gag cta	728
Ile Glu Glu Ala Lys Lys Arg Asp His Arg Lys Leu Gly Val Glu Leu	
215 220 225	
ggg ctt ttt agc ttt gat gat gag ata ggg gcg ggc tta cct tta tgg	776
Gly Leu Phe Ser Phe Asp Asp Glu Ile Gly Ala Gly Leu Pro Leu Trp	
230 235 240	
ctg cct aaa ggg gca agg ctt agg aag cgc att gaa gat tta ttg agt	824
Leu Pro Lys Gly Ala Arg Leu Arg Lys Arg Ile Glu Asp Leu Leu Ser	
245 250 255	
caa gcg tta ctt tta aga ggc tat gag ccg gtt aaa ggt cct gag att	872
Gln Ala Leu Leu Leu Arg Gly Tyr Glu Pro Val Lys Gly Pro Glu Ile	
260 265 270	
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Leu Lys Ser Asp Val Trp Lys Ile Ser Gly His Tyr Asp Asn Tyr Lys	
275 280 285 290	
gaa aac atg tat ttc acc acg att gat gag caa gaa tat ggc ata aag	968
Glu Asn Met Tyr Phe Thr Thr Ile Asp Glu Gln Glu Tyr Gly Ile Lys	
295 300 305	
cct atg aac tgc gtg ggg cat att aaa gtc tat caa agc gct ttg cac	1016
Pro Met Asn Cys Val Gly His Ile Lys Val Tyr Gln Ser Ala Leu His	
310 315 320	
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Ser Tyr Arg Asp Leu Pro Leu Arg Phe Tyr Glu Tyr Gly Val Val His	
325 330 335	
cgg cat gaa aaa agc ggc gtg ttg cat ggg ctt tta agg gtt agg gaa	1112
Arg His Glu Lys Ser Gly Val Leu His Gly Leu Leu Arg Val Arg Glu	
340 345 350	
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Phe Thr Gln Asp Asp Ala His Ile Phe Cys Ser Phe Glu Gln Ile Gln	
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Ser Glu Val Ser Ala Ile Leu Asp Phe Thr His Lys Ile Met Gln Ala	
375 380 385	
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Phe Asp Phe Ser Tyr Glu Met Glu Leu Ser Thr Arg Pro Ala Lys Ser	

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gcc tta aaa gaa cac cgc att gat tac aag att gat gaa ggg gga ggg Ala Leu Lys Glu His Arg Ile Asp Tyr Lys Ile Asp Glu Gly Gly Gly 420 425 430			1352
gct ttc tat ggg cct aag att gac att aaa atc act gac gct tta aag Ala Phe Tyr Gly Pro Lys Ile Asp Ile Lys Ile Thr Asp Ala Leu Lys 435 440 445 450			1400
cgt aaa tgg cag tgt ggc acg att caa gtg gat atg aat ttg cct gaa Arg Lys Trp Gln Cys Gly Thr Ile Gln Val Asp Met Asn Leu Pro Glu 455 460 465			1448
cgc ttc aag ctc gct ttc act aat gag tat aat cac gct gag cag ccg Arg Phe Lys Leu Ala Phe Thr Asn Glu Tyr Asn His Ala Glu Gln Pro 470 475 480			1496
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ccc tta aag gag ttt tta aac atg gtt gaa tct aag atg caa gag gtt Pro Leu Lys Glu Phe Leu Asn Met Val Glu Ser Lys Met Gln Glu Val 595 600 605 610			1880
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Ser Phe

cgt

1939

<210> 262

<211> 612

<212> PRT

<213> Helicobacter pylori

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			20					25					30		
Asn	Gly	Thr	Glu	Pro	Ile	Tyr	Phe	Asp	Asp	Ser	Pro	Leu	Ala	Leu	Glu
		35					40					45			
Val	Ile	Arg	His	Ser	Cys	Ala	His	Leu	Leu	Ala	Gln	Ser	Leu	Lys	Ala
	50					55					60				
Leu	Tyr	Pro	Asp	Ala	Lys	Phe	Phe	Val	Gly	Pro	Val	Val	Glu	Glu	Gly
65					70					75					80
Phe	Tyr	Tyr	Asp	Phe	Lys	Thr	Ser	Ser	Lys	Ile	Ser	Glu	Glu	Asp	Leu
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Pro	Lys	Ile	Glu	Ala	Lys	Met	Lys	Glu	Phe	Ala	Lys	Leu	Lys	Leu	Ala
			100					105					110		
Ile	Thr	Lys	Glu	Thr	Leu	Thr	Arg	Glu	Gln	Ala	Leu	Glu	Arg	Phe	Lys
		115					120						125		
Gly	Asp	Glu	Leu	Lys	His	Ala	Val	Met	Ser	Lys	Ile	Gly	Gly	Asp	Ala
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Phe	Gly	Val	Tyr	Gln	Gln	Gly	Glu	Phe	Glu	Asp	Leu	Cys	Lys	Gly	Pro
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His	Leu	Pro	Asn	Thr	Arg	Phe	Leu	Asn	His	Phe	Lys	Leu	Thr	Lys	Leu
				165					170					175	
Ala	Gly	Ala	Tyr	Leu	Gly	Gly	Asp	Glu	Asn	Asn	Glu	Met	Leu	Ile	Arg
			180					185					190		
Ile	Tyr	Gly	Ile	Ala	Phe	Ala	Thr	Lys	Glu	Gly	Leu	Lys	Asp	Tyr	Leu
		195					200						205		
Phe	Gln	Ile	Glu	Glu	Ala	Lys	Lys	Arg	Asp	His	Arg	Lys	Leu	Gly	Val
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Glu	Leu	Gly	Leu	Phe	Ser	Phe	Asp	Asp	Glu	Ile	Gly	Ala	Gly	Leu	Pro
225					230					235					240
Leu	Trp	Leu	Pro	Lys	Gly	Ala	Arg	Leu	Arg	Lys	Arg	Ile	Glu	Asp	Leu
				245					250					255	
Leu	Ser	Gln	Ala	Leu	Leu	Leu	Arg	Gly	Tyr	Glu	Pro	Val	Lys	Gly	Pro
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Glu	Ile	Leu	Lys	Ser	Asp	Val	Trp	Lys	Ile	Ser	Gly	His	Tyr	Asp	Asn
		275					280						285		
Tyr	Lys	Glu	Asn	Met	Tyr	Phe	Thr	Thr	Ile	Asp	Glu	Gln	Glu	Tyr	Gly
	290					295					300				
Ile	Lys	Pro	Met	Asn	Cys	Val	Gly	His	Ile	Lys	Val	Tyr	Gln	Ser	Ala
305					310						315				320
Leu	His	Ser	Tyr	Arg	Asp	Leu	Pro	Leu	Arg	Phe	Tyr	Glu	Tyr	Gly	Val
				325					330					335	
Val	His	Arg	His	Glu	Lys	Ser	Gly	Val	Leu	His	Gly	Leu	Leu	Arg	Val
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Pro	Ile	Val	Lys	Val	Gly	Arg	Ile	Ala	Gly	Gln	Phe	Ala	Lys	Pro	Arg		
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tcc	aat	gcg	act	gaa	atg	ctg	gat	aat	gaa	gaa	gtg	ttg	agt	tac	aga	200	
Ser	Asn	Ala	Thr	Glu	Met	Leu	Asp	Asn	Glu	Glu	Val	Leu	Ser	Tyr	Arg		
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ggg	gat	att	atc	aat	ggg	att	tcc	aaa	aaa	gaa	aga	gag	cca	aat	cct	248	
Gly	Asp	Ile	Ile	Asn	Gly	Ile	Ser	Lys	Lys	Glu	Arg	Glu	Pro	Asn	Pro		
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Glu	Arg	Met	Leu	Lys	Ala	Tyr	His	Gln	Ser	Val	Ala	Thr	Leu	Asn	Leu		
			70					75					80				
atc	aga	gcc	ttt	gct	caa	ggc	ggg	tta	gcg	gat	ttg	gag	caa	gtg	cat	344	
Ile	Arg	Ala	Phe	Ala	Gln	Gly	Gly	Leu	Ala	Asp	Leu	Glu	Gln	Val	His		
		85				90					95						
cgt	ttc	aat	ttg	gat	ttt	gtc	aaa	aac	aac	gac	ttt	ggg	caa	aaa	tac	392	
Arg	Phe	Asn	Leu	Asp	Phe	Val	Lys	Asn	Asn	Asp	Phe	Gly	Gln	Lys	Tyr		
	100					105					110						
cag	caa	atc	gct	gac	cgg	atc	acg	caa	gct	tta	ggg	ttt	atg	cga	gca	440	
Gln	Gln	Ile	Ala	Asp	Arg	Ile	Thr	Gln	Ala	Leu	Gly	Phe	Met	Arg	Ala		
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tgc	ggg	gtg	gag	ata	gag	cga	acg	cct	att	ctt	agg	gaa	gtg	gaa	ttt	488	
Cys	Gly	Val	Glu	Ile	Glu	Arg	Thr	Pro	Ile	Leu	Arg	Glu	Val	Glu	Phe		
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tac	acc	agc	cac	gaa	gcg	tta	ctg	ctc	cat	tat	gaa	gag	ccg	ttg	gtg	536	
Tyr	Thr	Ser	His	Glu	Ala	Leu	Leu	Leu	His	Tyr	Glu	Glu	Pro	Leu	Val		
			150					155					160				
cgt	aag	gat	agt	ctg	act	aac	cag	ttt	tat	gat	tgc	tcc	gcg	cac	atg	584	
Arg	Lys	Asp	Ser	Leu	Thr	Asn	Gln	Phe	Tyr	Asp	Cys	Ser	Ala	His	Met		
	165					170					175						
cta	tgg	att	ggc	gaa	agg	aca	aga	gac	cct	aag	ggt	gcg	cat	gtg	gag	632	
Leu	Trp	Ile	Gly	Glu	Arg	Thr	Arg	Asp	Pro	Lys	Gly	Ala	His	Val	Glu		
	180					185					190						
ttt	tta	agg	ggg	gtt	tgt	aac	cct	att	ggc	gtg	aaa	atc	ggg	cct	aat	680	
Phe	Leu	Arg	Gly	Val	Cys	Asn	Pro	Ile	Gly	Val	Lys	Ile	Gly	Pro	Asn		
195				200						205				210			
gcg	agc	gtg	agc	gaa	gtg	tta	gaa	ttg	tgc	gat	gtt	tta	aac	ccg	cgc	728	
Ala	Ser	Val	Ser	Glu	Val	Leu	Glu	Leu	Cys	Asp	Val	Leu	Asn	Pro	Arg		
			215					220					225				
aac	att	aag	ggg	cgt	ttg	aat	ttg	atc	gtg	cgc	atg	ggt	tct	aag	atg	776	
Asn	Ile	Lys	Gly	Arg	Leu	Asn	Leu	Ile	Val	Arg	Met	Gly	Ser	Lys	Met		
			230					235					240				

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 Ile Lys Glu Arg Leu Pro Lys Leu Leu Gln Gly Val Leu Glu Glu Lys
 245 250 255

 cgc cat att tta tgg agc att gat ccc atg cat ggc aac acg gtt aaa 872
 Arg His Ile Leu Trp Ser Ile Asp Pro Met His Gly Asn Thr Val Lys
 260 265 270

 acc agc ttg ggg gtt aaa aca agg gct ttt gat agc gtg tta gat gaa 920
 Thr Ser Leu Gly Val Lys Thr Arg Ala Phe Asp Ser Val Leu Asp Glu
 275 280 285 290

 gtg aaa agc ttt ttt gaa atc cat agg gct gaa ggg agt ttg gct tca 968
 Val Lys Ser Phe Phe Glu Ile His Arg Ala Glu Gly Ser Leu Ala Ser
 295 300 305

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 Gly Val His Leu Glu Met Thr Gly Glu Asn Val Thr Glu Cys Ile Gly
 310 315 320

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 Gly Ser Gln Ala Ile Thr Glu Glu Gly Leu Ser Cys His Tyr Tyr Thr
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 Gln Cys Asp Pro Arg Leu Asn Ala Thr Gln Ala Leu Glu Leu Ala Phe
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 35 40 45
 Tyr Arg Gly Asp Ile Ile Asn Gly Ile Ser Lys Lys Glu Arg Glu Pro
 50 55 60
 Asn Pro Glu Arg Met Leu Lys Ala Tyr His Gln Ser Val Ala Thr Leu
 65 70 75 80
 Asn Leu Ile Arg Ala Phe Ala Gln Gly Gly Leu Ala Asp Leu Glu Gln
 85 90 95
 Val His Arg Phe Asn Leu Asp Phe Val Lys Asn Asn Asp Phe Gly Gln
 100 105 110
 Lys Tyr Gln Gln Ile Ala Asp Arg Ile Thr Gln Ala Leu Gly Phe Met

115	120	125
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130	135	140
Glu Phe Tyr Thr Ser His Glu Ala Leu Leu Leu His Tyr Glu Glu Pro		
145	150	155
Leu Val Arg Lys Asp Ser Leu Thr Asn Gln Phe Tyr Asp Cys Ser Ala		
165	170	175
His Met Leu Trp Ile Gly Glu Arg Thr Arg Asp Pro Lys Gly Ala His		
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Val Glu Phe Leu Arg Gly Val Cys Asn Pro Ile Gly Val Lys Ile Gly		
195	200	205
Pro Asn Ala Ser Val Ser Glu Val Leu Glu Leu Cys Asp Val Leu Asn		
210	215	220
Pro Arg Asn Ile Lys Gly Arg Leu Asn Leu Ile Val Arg Met Gly Ser		
225	230	235
Lys Met Ile Lys Glu Arg Leu Pro Lys Leu Leu Gln Gly Val Leu Glu		
245	250	255
Glu Lys Arg His Ile Leu Trp Ser Ile Asp Pro Met His Gly Asn Thr		
260	265	270
Val Lys Thr Ser Leu Gly Val Lys Thr Arg Ala Phe Asp Ser Val Leu		
275	280	285
Asp Glu Val Lys Ser Phe Phe Glu Ile His Arg Ala Glu Gly Ser Leu		
290	295	300
Ala Ser Gly Val His Leu Glu Met Thr Gly Glu Asn Val Thr Glu Cys		
305	310	315
Ile Gly Gly Ser Gln Ala Ile Thr Glu Glu Gly Leu Ser Cys His Tyr		
325	330	335
Tyr Thr Gln Cys Asp Pro Arg Leu Asn Ala Thr Gln Ala Leu Glu Leu		
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Ala Val Arg Leu Gly Pro Pro Ile Arg Ser Met Phe Val Gly Asn Ala	
5	10
ccg ttt tgg ctt tgg ttt ttt aaa gct tgc atg cct tca ctc aaa ttg	152
Pro Phe Trp Leu Trp Phe Phe Lys Ala Cys Met Pro Ser Leu Lys Leu	
20	25
	30

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 Arg Thr Met Asp Ser Phe Phe Asn Lys Met Met Gln Leu Arg Val Met
 35 40 45 50

agc gaa agc aat cgc ggg ctt gca tgc gaa gag acc gcc cca atc atg 248
 Ser Glu Ser Asn Arg Gly Leu Ala Cys Glu Glu Thr Ala Pro Ile Met
 55 60 65

ccc aag ctt gaa atc cca caa acc cca tgc aat aaa gcc gta tca atc 296
 Pro Lys Leu Glu Ile Pro Gln Thr Pro Cys Asn Lys Ala Val Ser Ile
 70 75 80

tca aac aac tct tca cgc atc gct tca att tct tta tca taaggctgta 345
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 85 90 95

aagtaaaatc cttaaagcgt tcaaaattca aattcaaadc tgt 388

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<211> 95

<212> PRT

<213> Helicobacter pylori

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 Lys Leu Arg Thr Met Asp Ser Phe Asn Lys Met Met Gln Leu Arg
 35 40 45
 Val Met Ser Glu Ser Asn Arg Gly Leu Ala Cys Glu Glu Thr Ala Pro
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 Ile Met Pro Lys Leu Glu Ile Pro Gln Thr Pro Cys Asn Lys Ala Val
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 Glu Phe His Gln Ile Tyr Asp Pro Leu Gly Asn Ile Trp Leu Ser Ala
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ctt gtg gcc tta ttg ccg att tta ttg ttt ttc tta tct tta atg gtt	152
Leu Val Ala Leu Leu Pro Ile Leu Leu Phe Phe Leu Ser Leu Met Val	
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Phe Lys Leu Lys Gly Tyr Thr Ala Ala Phe Leu Ser Val Ala Leu Ser	
35 40 45 50	
gcc gtt att gcg gtt tta gtg tat aaa atg cct gtt agc atg gtg ggt	248
Ala Val Ile Ala Val Leu Val Tyr Lys Met Pro Val Ser Met Val Gly	
55 60 65	
tca agc ttc ctt tac ggc ttt ctt tat ggc tta tgg ccg atc gct tgg	296
Ser Ser Phe Leu Tyr Gly Phe Leu Tyr Gly Leu Trp Pro Ile Ala Trp	
70 75 80	
atc att att gcg gcg att ttt tta tac aaa ctc agc gtt aaa tcc ggc	344
Ile Ile Ile Ala Ala Ile Phe Leu Tyr Lys Leu Ser Val Lys Ser Gly	
85 90 95	
tat ttt gaa att tta aaa gaa agc gtc cag tcc atc act tta gat cac	392
Tyr Phe Glu Ile Leu Lys Glu Ser Val Gln Ser Ile Thr Leu Asp His	
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cgc att tta gtg att ttg att ggc ttt tgt ttt ggc tcg ttt tta gaa	440
Arg Ile Leu Val Ile Leu Ile Gly Phe Cys Phe Gly Ser Phe Leu Glu	
115 120 125 130	
ggg gcg atc ggc ttt gga ggg cct att gcc att acc gca gcg att tta	488
Gly Ala Ile Gly Phe Gly Gly Pro Ile Ala Ile Thr Ala Ala Ile Leu	
135 140 145	
gtg ggc tta ggg tta agc cct ttg tat tct gcc ggg tta tgt ttg atc	536
Val Gly Leu Gly Leu Ser Pro Leu Tyr Ser Ala Gly Leu Cys Leu Ile	
150 155 160	
gct aat acc gct cct gta gct ttt ggc gcg gtg ggt atc cct ata agt	584
Ala Asn Thr Ala Pro Val Ala Phe Gly Ala Val Gly Ile Pro Ile Ser	
165 170 175	
gct atg gcg agc gcg gta ggg gtg cca gcg att tta att tca gcc atg	632
Ala Met Ala Ser Ala Val Gly Val Pro Ala Ile Leu Ile Ser Ala Met	
180 185 190	
acg ggt aaa atc ctc ttt ttt gtg agc ttg tta gtg ccg ttt ttc att	680
Thr Gly Lys Ile Leu Phe Phe Val Ser Leu Leu Val Pro Phe Phe Ile	
195 200 205 210	
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Val Phe Leu Met Asp Gly Phe Lys Gly Ile Lys Glu Thr Phe Pro Ala	
215 220 225	
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Val Phe Ile Ala Ala Phe Ser Phe Ala Gly Ala Gln Phe Leu Ser Ser	

230	235	240	
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ctc gtt gca aca gcg ctc ttt ttg aaa ttt tgg cag cct aaa gcg att Leu Val Ala Thr Ala Leu Phe Leu Lys Phe Trp Gln Pro Lys Ala Ile 260 265 270			872
ttt aga agc gac ggc aaa gcg gct tcg ttc act aag agt aac cat cat Phe Arg Ser Asp Gly Lys Ala Ala Ser Phe Thr Lys Ser Asn His His 275 280 285 290			920
att tgt aag atc tat gtc gct tgg tct cct ttt gtg att tta gtt tta Ile Cys Lys Ile Tyr Val Ala Trp Ser Pro Phe Val Ile Leu Val Leu 295 300 305			968
gtg att gtg cta tgg ata cag cct ttt ttt aaa gcc ttg ttt gaa aaa Val Ile Val Leu Trp Ile Gln Pro Phe Phe Lys Ala Leu Phe Glu Lys 310 315 320			1016
gac ggc ttg tta gct ttt tct aat ttt tat ttt gaa ttc aat aac atc Asp Gly Leu Leu Ala Phe Ser Asn Phe Tyr Phe Glu Phe Asn Asn Ile 325 330 335			1064
agt aac cac atc ttt aaa agc ccg cct ttt gta gaa gcc aat caa agc Ser Asn His Ile Phe Lys Ser Pro Pro Phe Val Glu Ala Asn Gln Ser 340 345 350			1112
gtg agt ttt ccg gtg gtg ttt aaa ttt ctc tta atc aac acg gtt ggc Val Ser Phe Pro Val Val Phe Lys Phe Leu Leu Ile Asn Thr Val Gly 355 360 365 370			1160
act tcc att ttt tta gcc gct ctt gtt agc atg ctc gtt tta agg gtg Thr Ser Ile Phe Leu Ala Ala Leu Val Ser Met Leu Val Leu Arg Val 375 380 385			1208
cga gtg agc gat gcg ctg agc gtc ttt ggc gag act tta aaa gaa atg Arg Val Ser Asp Ala Leu Ser Val Phe Gly Glu Thr Leu Lys Glu Met 390 395 400			1256
cgt tac ccc att ctc acc att ggt tta gtc tta agc ttt gcc tat gtg Arg Tyr Pro Ile Leu Thr Ile Gly Leu Val Leu Ser Phe Ala Tyr Val 405 410 415			1304
tct aat tac agc ggg att tct tcc act cta gcc tta gcg ctc acg cat Ser Asn Tyr Ser Gly Ile Ser Ser Thr Leu Ala Leu Ala Leu Thr His 420 425 430			1352
acg ggt ttg gct ttc acc ttt ttc tcg ccc ttg atc ggg tgg gta ggc Thr Gly Leu Ala Phe Thr Phe Phe Ser Pro Leu Ile Gly Trp Val Gly 435 440 445 450			1400
gtg ttt tta acc ggg agc gat acg agt tcc aat ctt ttg ttt ggc tct			1448

Val Phe Leu Thr Gly Ser Asp Thr Ser Ser Asn Leu Leu Phe Gly Ser
 455 460 465
 tta cag caa ctc acc gcc caa cga ttg cac ctc cct gag gtt tta acc 1496
 Leu Gln Gln Leu Thr Ala Gln Arg Leu His Leu Pro Glu Val Leu Thr
 470 475 480
 cta acg gct aat acc gtg ggt ggc act tta ggc aag atg ata agc cct 1544
 Leu Thr Ala Asn Thr Val Gly Gly Thr Leu Gly Lys Met Ile Ser Pro
 485 490 495
 caa agc atc gct atc gct tgc gcg gcg gtg ggg tta gcc ggg aaa gag 1592
 Gln Ser Ile Ala Ile Ala Cys Ala Ala Val Gly Leu Ala Gly Lys Glu
 500 505 510
 agc gat ttg ttc aaa ttc acg gtt aaa tac tcc ctt att ttt gta gcg 1640
 Ser Asp Leu Phe Lys Phe Thr Val Lys Tyr Ser Leu Ile Phe Val Ala
 515 520 525 530
 atc atg gga gtt gtg atc agc gcg att gcg tat ttg atc cct gaa gtg 1688
 Ile Met Gly Val Val Ile Ser Ala Ile Ala Tyr Leu Ile Pro Glu Val
 535 540 545
 gtg cct gcg ata aag tagggccatt ttagatttag cagggtttaa cccccaaata 1743
 Val Pro Ala Ile Lys
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 aatttttttg ttt 1756
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 20 25 30
 Met Val Phe Lys Leu Lys Gly Tyr Thr Ala Ala Phe Leu Ser Val Ala
 35 40 45
 Leu Ser Ala Val Ile Ala Val Leu Val Tyr Lys Met Pro Val Ser Met
 50 55 60
 Val Gly Ser Ser Phe Leu Tyr Gly Phe Leu Tyr Gly Leu Trp Pro Ile
 65 70 75 80
 Ala Trp Ile Ile Ile Ala Ala Ile Phe Leu Tyr Lys Leu Ser Val Lys
 85 90 95
 Ser Gly Tyr Phe Glu Ile Leu Lys Glu Ser Val Gln Ser Ile Thr Leu
 100 105 110
 Asp His Arg Ile Leu Val Ile Leu Ile Gly Phe Cys Phe Gly Ser Phe
 115 120 125
 Leu Glu Gly Ala Ile Gly Phe Gly Gly Pro Ile Ala Ile Thr Ala Ala
 130 135 140
 Ile Leu Val Gly Leu Gly Leu Ser Pro Leu Tyr Ser Ala Gly Leu Cys
 145 150 155 160

Leu	Ile	Ala	Asn	Thr	Ala	Pro	Val	Ala	Phe	Gly	Ala	Val	Gly	Ile	Pro		
				165					170					175			
Ile	Ser	Ala	Met	Ala	Ser	Ala	Val	Gly	Val	Pro	Ala	Ile	Leu	Ile	Ser		
			180					185					190				
Ala	Met	Thr	Gly	Lys	Ile	Leu	Phe	Phe	Val	Ser	Leu	Leu	Val	Pro	Phe		
		195					200					205					
Phe	Ile	Val	Phe	Leu	Met	Asp	Gly	Phe	Lys	Gly	Ile	Lys	Glu	Thr	Phe		
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Pro	Ala	Val	Phe	Ile	Ala	Ala	Phe	Ser	Phe	Ala	Gly	Ala	Gln	Phe	Leu		
225					230					235					240		
Ser	Ser	Asn	Tyr	Leu	Gly	Pro	Glu	Leu	Pro	Gly	Ile	Ile	Ser	Ala	Leu		
			245						250					255			
Val	Ser	Leu	Val	Ala	Thr	Ala	Leu	Phe	Leu	Lys	Phe	Trp	Gln	Pro	Lys		
			260					265					270				
Ala	Ile	Phe	Arg	Ser	Asp	Gly	Lys	Ala	Ala	Ser	Phe	Thr	Lys	Ser	Asn		
		275					280					285					
His	His	Ile	Cys	Lys	Ile	Tyr	Val	Ala	Trp	Ser	Pro	Phe	Val	Ile	Leu		
	290					295					300						
Val	Leu	Val	Ile	Val	Leu	Trp	Ile	Gln	Pro	Phe	Phe	Lys	Ala	Leu	Phe		
305					310					315				320			
Glu	Lys	Asp	Gly	Leu	Leu	Ala	Phe	Ser	Asn	Phe	Tyr	Phe	Glu	Phe	Asn		
			325						330					335			
Asn	Ile	Ser	Asn	His	Ile	Phe	Lys	Ser	Pro	Pro	Phe	Val	Glu	Ala	Asn		
			340					345					350				
Gln	Ser	Val	Ser	Phe	Pro	Val	Val	Phe	Lys	Phe	Leu	Leu	Ile	Asn	Thr		
		355					360					365					
Val	Gly	Thr	Ser	Ile	Phe	Leu	Ala	Ala	Leu	Val	Ser	Met	Leu	Val	Leu		
	370					375					380						
Arg	Val	Arg	Val	Ser	Asp	Ala	Leu	Ser	Val	Phe	Gly	Glu	Thr	Leu	Lys		
385					390					395					400		
Glu	Met	Arg	Tyr	Pro	Ile	Leu	Thr	Ile	Gly	Leu	Val	Leu	Ser	Phe	Ala		
			405						410					415			
Tyr	Val	Ser	Asn	Tyr	Ser	Gly	Ile	Ser	Ser	Thr	Leu	Ala	Leu	Ala	Leu		
			420					425					430				
Thr	His	Thr	Gly	Leu	Ala	Phe	Thr	Phe	Phe	Ser	Pro	Leu	Ile	Gly	Trp		
		435					440					445					
Val	Gly	Val	Phe	Leu	Thr	Gly	Ser	Asp	Thr	Ser	Ser	Asn	Leu	Leu	Phe		
	450					455					460						
Gly	Ser	Leu	Gln	Gln	Leu	Thr	Ala	Gln	Arg	Leu	His	Leu	Pro	Glu	Val		
465					470				475					480			
Leu	Thr	Leu	Thr	Ala	Asn	Thr	Val	Gly	Gly	Thr	Leu	Gly	Lys	Met	Ile		
				485					490					495			
Ser	Pro	Gln	Ser	Ile	Ala	Ile	Ala	Cys	Ala	Ala	Val	Gly	Leu	Ala	Gly		
			500					505					510				
Lys	Glu	Ser	Asp	Leu	Phe	Lys	Phe	Thr	Val	Lys	Tyr	Ser	Leu	Ile	Phe		
		515					520					525					
Val	Ala	Ile	Met	Gly	Val	Val	Ile	Ser	Ala	Ile	Ala	Tyr	Leu	Ile	Pro		
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Glu	Val	Val	Pro	Ala	Ile	Lys											
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 <212> DNA

<213> Helicobacter pylori

<220>

<221> CDS

<222> (51)...(908)

<400> 269

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ttt tta aac gac cat ata aat gtt ttt ggc ttg att gca gcg ctt gtg      104
Phe Leu Asn Asp His Ile Asn Val Phe Gly Leu Ile Ala Ala Leu Val
      5                      10                      15

att tta gtt tta acc atc tat gaa tcc agt tcg ctc att aaa gaa atg      152
Ile Leu Val Leu Thr Ile Tyr Glu Ser Ser Ser Leu Ile Lys Glu Met
      20                      25                      30

cgc gac agc aaa tct caa ggt gag ctt gta gaa aat ggg cat ttg att      200
Arg Asp Ser Lys Ser Gln Gly Glu Leu Val Glu Asn Gly His Leu Ile
      35                      40                      45                      50

gat ggg ata ggg gag ttt gcc aat aat gtg cca gta ggc tgg atc gca      248
Asp Gly Ile Gly Glu Phe Ala Asn Asn Val Pro Val Gly Trp Ile Ala
      55                      60                      65

agc ttt atg tgc acg att gtg tgg gct ttt tgg tat ttc ttc ttt ggg      296
Ser Phe Met Cys Thr Ile Val Trp Ala Phe Trp Tyr Phe Phe Phe Gly
      70                      75                      80

tat ccg ctg aat agc ttt tct caa atc ggg caa tac aat gaa gag gtt      344
Tyr Pro Leu Asn Ser Phe Ser Gln Ile Gly Gln Tyr Asn Glu Glu Val
      85                      90                      95

aaa gcg cac aac caa aaa ttt gag gcc aag tgg aag cat ttg ggt caa      392
Lys Ala His Asn Gln Lys Phe Glu Ala Lys Trp Lys His Leu Gly Gln
      100                      105                      110

aag gaa ctg gtg gat atg ggt caa ggc atc ttt tta gtc cat tgt tcg      440
Lys Glu Leu Val Asp Met Gly Gln Gly Ile Phe Leu Val His Cys Ser
      115                      120                      125                      130

caa tgc cat ggc atc acc gct gag ggc ttg cat ggg agc gct caa aat      488
Gln Cys His Gly Ile Thr Ala Glu Gly Leu His Gly Ser Ala Gln Asn
      135                      140                      145

ctg gtg cgc tgg ggt aaa gaa gag ggt att atg gat acc att aag cat      536
Leu Val Arg Trp Gly Lys Glu Glu Gly Ile Met Asp Thr Ile Lys His
      150                      155                      160

ggc tct aag ggc atg gat tat ctc gct ggg gaa atg ccc gct atg gaa      584
Gly Ser Lys Gly Met Asp Tyr Leu Ala Gly Glu Met Pro Ala Met Glu
      165                      170                      175
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ttg gac gaa aaa gac gct aaa gcg atc gca agc tat gtg atg gca gaa	632
Leu Asp Glu Lys Asp Ala Lys Ala Ile Ala Ser Tyr Val Met Ala Glu	
180 185 190	
ctt tct agc gtt aaa aaa acc aaa aac cct caa ctc att gat aaa ggc	680
Leu Ser Ser Val Lys Lys Thr Lys Asn Pro Gln Leu Ile Asp Lys Gly	
195 200 205 210	
aag gaa ttg ttt gaa agc atg ggt tgc aca ggc tgt cat ggc aat gat	728
Lys Glu Leu Phe Glu Ser Met Gly Cys Thr Gly Cys His Gly Asn Asp	
215 220 225	
ggt aag ggc ttg caa gaa aat caa gtg ttt gca gcc gat ttg acc gct	776
Gly Lys Gly Leu Gln Glu Asn Gln Val Phe Ala Ala Asp Leu Thr Ala	
230 235 240	
tac ggc aca gag aat ttt ttg aga aat atc tta acg cat ggc aaa aag	824
Tyr Gly Thr Glu Asn Phe Leu Arg Asn Ile Leu Thr His Gly Lys Lys	
245 250 255	
ggc aat ata ggg cat atg cca tca ttc aag tat aaa aac ttt agc gat	872
Gly Asn Ile Gly His Met Pro Ser Phe Lys Tyr Lys Asn Phe Ser Asp	
260 265 270	
ttg caa gtt aaa gcg tta ctg aat tta tcc aat cgc taaaaccctt	918
Leu Gln Val Lys Ala Leu Leu Asn Leu Ser Asn Arg	
275 280 285	
agaagattaa aggaaaagag atgaaatttt taaacggatt agc	961

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<211> 286

<212> PRT

<213> Helicobacter pylori

<400> 270

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Leu Val Ile Leu Val Leu Thr Ile Tyr Glu Ser Ser Ser Leu Ile Lys	
20 25 30	
Glu Met Arg Asp Ser Lys Ser Gln Gly Glu Leu Val Glu Asn Gly His	
35 40 45	
Leu Ile Asp Gly Ile Gly Glu Phe Ala Asn Asn Val Pro Val Gly Trp	
50 55 60	
Ile Ala Ser Phe Met Cys Thr Ile Val Trp Ala Phe Trp Tyr Phe Phe	
65 70 75 80	
Phe Gly Tyr Pro Leu Asn Ser Phe Ser Gln Ile Gly Gln Tyr Asn Glu	
85 90 95	
Glu Val Lys Ala His Asn Gln Lys Phe Glu Ala Lys Trp Lys His Leu	
100 105 110	
Gly Gln Lys Glu Leu Val Asp Met Gly Gln Gly Ile Phe Leu Val His	
115 120 125	
Cys Ser Gln Cys His Gly Ile Thr Ala Glu Gly Leu His Gly Ser Ala	
130 135 140	
Gln Asn Leu Val Arg Trp Gly Lys Glu Glu Gly Ile Met Asp Thr Ile	

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 <211> 68
 <212> PRT
 <213> Helicobacter pylori

<400> 272
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 Leu Leu Cys Val Ala Val Phe Phe Thr Leu Lys Ala Ile His Ile Gln
 20 25 30
 Lys Glu Gln Ala Thr Asn Tyr Tyr Arg Tyr Lys Asp Ile Asn Ala Leu
 35 40 45
 Glu Thr Lys Asn Thr Gln Asn Arg Ala Asn Tyr Glu Leu Val Asn Gln
 50 55 60
 Gly Ser Lys Lys
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<210> 273
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 <212> DNA
 <213> Helicobacter pylori

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 <221> CDS
 <222> (51)...(770)

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 Arg Ala Phe Glu Tyr Arg Arg Ala Ala Lys Glu Lys Arg Trp Asp Lys
 5 10 15
 atg agt aag gtt ttc cca aag ctc gct aaa gcg atc act cta gcg gca 152
 Met Ser Lys Val Phe Pro Lys Leu Ala Lys Ala Ile Thr Leu Ala Ala
 20 25 30
 aaa gat ggc ggg agc gaa ccg gac acg aac gcc aaa cta cga aca gcg 200
 Lys Asp Gly Gly Ser Glu Pro Asp Thr Asn Ala Lys Leu Arg Thr Ala
 35 40 45 50
 att tta aac gct aaa gcg caa aac atg cct aaa gac aat att gac gca 248
 Ile Leu Asn Ala Lys Ala Gln Asn Met Pro Lys Asp Asn Ile Asp Ala
 55 60 65
 gcg att aaa aga gcg agc agt aaa gaa ggg aat ttg agt gaa atc act 296
 Ala Ile Lys Arg Ala Ser Ser Lys Glu Gly Asn Leu Ser Glu Ile Thr
 70 75 80
 tat gaa ggt aag gcg aat ttt ggc gtg cta atc atc atg gaa tgc atg 344
 Tyr Glu Gly Lys Ala Asn Phe Gly Val Leu Ile Ile Met Glu Cys Met
 85 90 95

act gat aac ccc acc aga acc att gcc aac ctt aaa agc tat ttc aat 392
 Thr Asp Asn Pro Thr Arg Thr Ile Ala Asn Leu Lys Ser Tyr Phe Asn
 100 105 110

 aaa acg caa ggg gca agc atc gtg cct aat ggc tct tta gag ttt atg 440
 Lys Thr Gln Gly Ala Ser Ile Val Pro Asn Gly Ser Leu Glu Phe Met
 115 120 125 130

 ttt aac cga aaa agc gtg ttt gaa tgc ttg aaa aat gaa gtg gaa aat 488
 Phe Asn Arg Lys Ser Val Phe Glu Cys Leu Lys Asn Glu Val Glu Asn
 135 140 145

 tta aaa ctc agt cta gaa gat tta gaa ttc gct ctc att gat tat ggt 536
 Leu Lys Leu Ser Leu Glu Asp Leu Glu Phe Ala Leu Ile Asp Tyr Gly
 150 155 160

 ttg gaa gaa tta gaa gaa gtg gaa gac aag atc att att agg ggg gat 584
 Leu Glu Glu Leu Glu Glu Val Glu Asp Lys Ile Ile Ile Arg Gly Asp
 165 170 175

 tat aac agc ttc aag ctt tta aat gag ggg ttt gaa agc ttg aaa tta 632
 Tyr Asn Ser Phe Lys Leu Leu Asn Glu Gly Phe Glu Ser Leu Lys Leu
 180 185 190

 ccc att tta aaa gcg agt ttg caa cgc atc gcc aca acg ccc att gaa 680
 Pro Ile Leu Lys Ala Ser Leu Gln Arg Ile Ala Thr Thr Pro Ile Glu
 195 200 205 210

 ttg aat gac gaa caa atg gag ctt acc gaa aaa tta ctg gac agg att 728
 Leu Asn Asp Glu Gln Met Glu Leu Thr Glu Lys Leu Leu Asp Arg Ile
 215 220 225

 gaa gac gat gat gat gtg gtc gcg ctt tat acc aat att gag 770
 Glu Asp Asp Asp Asp Val Val Ala Leu Tyr Thr Asn Ile Glu
 230 235 240

 tgaaatgcaa aaagactcaa agtatTTTTT taaaccaccc aagcattcat cccaataggg 830
 aatgcgttgg aga 843

<210> 274

<211> 240

<212> PRT

<213> *Helicobacter pylori*

<400> 274

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 Ala Ala Lys Asp Gly Gly Ser Glu Pro Asp Thr Asn Ala Lys Leu Arg
 35 40 45
 Thr Ala Ile Leu Asn Ala Lys Ala Gln Asn Met Pro Lys Asp Asn Ile
 50 55 60
 Asp Ala Ala Ile Lys Arg Ala Ser Ser Lys Glu Gly Asn Leu Ser Glu

65		70		75		80
Ile Thr Tyr Glu Gly Lys Ala Asn Phe Gly Val Leu Ile Ile Met Glu						
	85		90		95	
Cys Met Thr Asp Asn Pro Thr Arg Thr Ile Ala Asn Leu Lys Ser Tyr						
	100		105		110	
Phe Asn Lys Thr Gln Gly Ala Ser Ile Val Pro Asn Gly Ser Leu Glu						
	115		120		125	
Phe Met Phe Asn Arg Lys Ser Val Phe Glu Cys Leu Lys Asn Glu Val						
	130		135		140	
Glu Asn Leu Lys Leu Ser Leu Glu Asp Leu Glu Phe Ala Leu Ile Asp						
145		150		155		160
Tyr Gly Leu Glu Glu Leu Glu Glu Val Glu Asp Lys Ile Ile Ile Arg						
	165		170		175	
Gly Asp Tyr Asn Ser Phe Lys Leu Leu Asn Glu Gly Phe Glu Ser Leu						
	180		185		190	
Lys Leu Pro Ile Leu Lys Ala Ser Leu Gln Arg Ile Ala Thr Thr Pro						
	195		200		205	
Ile Glu Leu Asn Asp Glu Gln Met Glu Leu Thr Glu Lys Leu Leu Asp						
	210		215		220	
Arg Ile Glu Asp Asp Asp Asp Val Val Ala Leu Tyr Thr Asn Ile Glu						
225		230		235		240

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<211> 451

<212> DNA

<213> Helicobacter pylori

<220>

<221> CDS

<222> (108)...(392)

<400> 275

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Met Val Val
1

gct aag aat gaa gac aac aaa aaa ttg tat gac atc att gac ggc cag 164
Ala Lys Asn Glu Asp Asn Lys Lys Leu Tyr Asp Ile Ile Asp Gly Gln
5 10 15

caa cga acg act acc atc ttc atg ctc ttg cat gtc ttg gcg aac aaa 212
Gln Arg Thr Thr Thr Ile Phe Met Leu Leu His Val Leu Ala Asn Lys
20 25 30 35

caa aac gag aaa gac aag caa gaa aca aga aaa tat cta tac caa aag 260
Gln Asn Glu Lys Asp Lys Gln Glu Thr Arg Lys Tyr Leu Tyr Gln Lys
40 45 50

ggg gaa tta aaa tta gaa gtc gcc ccc aaa aac caa agc ttc ttc aaa 308
Gly Glu Leu Lys Leu Glu Val Ala Pro Lys Asn Gln Ser Phe Phe Lys
55 60 65

acg ctc ttg gaa gcg gca gaa aag gag aat atc agc cag aaa aag atg 356

Thr	Leu	Leu	Glu	Ala	Ala	Glu	Lys	Glu	Asn	Ile	Ser	Gln	Lys	Lys	Met		
			70					75					80				
cag	aca	ccg	agg	gca	agc	aaa	atc	ttt	ttg	aag	ttt	tga	agg	ctat		402	
Gln	Thr	Pro	Arg	Ala	Ser	Lys	Ile	Phe	Leu	Lys	Phe						
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<210> 276																	
<211> 95																	
<212> PRT																	
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1				5					10					15			
Asp	Gly	Gln	Gln	Arg	Thr	Thr	Thr	Ile	Phe	Met	Leu	Leu	His	Val	Leu		
			20					25					30				
Ala	Asn	Lys	Gln	Asn	Glu	Lys	Asp	Lys	Gln	Glu	Thr	Arg	Lys	Tyr	Leu		
		35					40					45					
Tyr	Gln	Lys	Gly	Glu	Leu	Lys	Leu	Glu	Val	Ala	Pro	Lys	Asn	Gln	Ser		
	50					55					60						
Phe	Phe	Lys	Thr	Leu	Leu	Glu	Ala	Ala	Glu	Lys	Glu	Asn	Ile	Ser	Gln		
65					70					75					80		
Lys	Lys	Met	Gln	Thr	Pro	Arg	Ala	Ser	Lys	Ile	Phe	Leu	Lys	Phe			
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						Met											
						1											
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Ser	Asp	Asn	Glu	Arg	Thr	Ile	Val	Val	Arg	Val	Leu	Lys	Phe	Asp	Pro		
			5					10					15				
caa	agc	gcg	gtg	agt	aag	ccg	cat	ttt	aaa	gag	tat	cag	ttg	aaa	gaa	152	
Gln	Ser	Ala	Val	Ser	Lys	Pro	His	Phe	Lys	Glu	Tyr	Gln	Leu	Lys	Glu		
			20				25					30					
acg	cca	tcc	atg	acg	ctt	ttt	atc	gct	ttg	aac	ctc	att	aga	gag	cat	200	
Thr	Pro	Ser	Met	Thr	Leu	Phe	Ile	Ala	Leu	Asn	Leu	Ile	Arg	Glu	His		
	35					40					45						

caa gat ccg gat ttg agt ttt gat ttt gtg tgc cgc gct ggg att tgc 248
 Gln Asp Pro Asp Leu Ser Phe Asp Phe Val Cys Arg Ala Gly Ile Cys
 50 55 60 65

ggc tct tgc gcg atg atg gtt aat ggg aga ccg agg cta gct tgt aaa 296
 Gly Ser Cys Ala Met Met Val Asn Gly Arg Pro Arg Leu Ala Cys Lys
 70 75 80

acc cta act tct agc ttt gaa agc ggg gtg atc acg ctc atg ccc atg 344
 Thr Leu Thr Ser Ser Phe Glu Ser Gly Val Ile Thr Leu Met Pro Met
 85 90 95

ccc agt ttt acg ctc att aaa gat ttg agc gtg aat acg ggc gat tgg 392
 Pro Ser Phe Thr Leu Ile Lys Asp Leu Ser Val Asn Thr Gly Asp Trp
 100 105 110

ttt ttg gat atg act aaa agg gtg gag agt tgg gcg cat tct aaa gaa 440
 Phe Leu Asp Met Thr Lys Arg Val Glu Ser Trp Ala His Ser Lys Glu
 115 120 125

gaa gtg gat att act aga ccg gaa aaa agg gtt gag cct gac gaa gcc 488
 Glu Val Asp Ile Thr Arg Pro Glu Lys Arg Val Glu Pro Asp Glu Ala
 130 135 140 145

caa gaa gtc ttt gaa cta gac agg tgt att gaa tgc ggg tgt tgt atc 536
 Gln Glu Val Phe Glu Leu Asp Arg Cys Ile Glu Cys Gly Cys Cys Ile
 150 155 160

gct tct tgc ggg act aaa ctc atg cgc cct aat ttc att gga gct gct 584
 Ala Ser Cys Gly Thr Lys Leu Met Arg Pro Asn Phe Ile Gly Ala Ala
 165 170 175

ggc atg aac aga gcc atg cgt ttt atg att gac agc cac gat gaa aga 632
 Gly Met Asn Arg Ala Met Arg Phe Met Ile Asp Ser His Asp Glu Arg
 180 185 190

aac gat gat gat ttt tat gag tta gtc ggc gat gat gat ggt gtt ttt 680
 Asn Asp Asp Asp Phe Tyr Glu Leu Val Gly Asp Asp Asp Gly Val Phe
 195 200 205

ggg tgc atg agc ctt atc gct tgc cat gac act tgc cc taaagaatta 728
 Gly Cys Met Ser Leu Ile Ala Cys His Asp Thr Cys
 210 215 220

cccttgcaaa gcagtatcgc cactttgcgt aacaggatgt tgaaagtggg taaaagccgc 788
 taatttcttt ttagtggggtc gtttttgaaa atcttttttag tctttttaag cg 840

<210> 278
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 <213> *Helicobacter pylori*

<400> 278
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Pro Lys Ile Ser Leu Ala Phe Cys Val Phe Thr Leu Pro Pro Tyr Asn
55 60 65

aag ggc gtt ttt tgatttaaga tttgcttttaa aaaacccatgc gtgagataaa 302
Lys Gly Val Phe
70

tatctttctaa agaagcgctt tttttggtgc caatcgccca aataggctc 351

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<212> PRT
<213> Helicobacter pylori

<400> 280
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Lys Asn Pro Met Ile Phe Leu Tyr Lys Asn Glu Met Ile Val Leu Lys
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Phe Ser Asn Ser Gln Asp Ala Leu Pro Ile Asn Lys Pro Ser Thr Leu
35 40 45
Ser Ile Pro Lys Ile Ser Leu Ala Phe Cys Val Phe Thr Leu Pro Pro
50 55 60
Tyr Asn Lys Gly Val Phe
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<212> DNA
<213> Helicobacter pylori

<220>
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gagagagaga gtaaaactct tttatcaaat ccattgtttg gtggagagtt taaccccaga 180
gaatatagcc aaattagaag aaacgatcgc tcctttttaga gctttttcta gcatagagtt 240
tttgatatt accgataaag aattagaacc acgccacaat tataataagc ttgacccctt 300
aatagcgagt gaaattaaaa aattgtatctt aaaactcaat gctttttcgc aaaaacgctt 360
ttctaaa atg atc atg tgc cgt ttc ttt ttt gcc tcc ctt ttc ccc caa 409
Met Ile Met Cys Arg Phe Phe Phe Ala Ser Leu Phe Pro Gln
1 5 10

tac gat aag atg atc atg ttt gat gtg gac act ttg ttt gtg aat gat 457
Tyr Asp Lys Met Ile Met Phe Asp Val Asp Thr Leu Phe Val Asn Asp
15 20 25 30

att agc gag agc ttt ttt atc ccc ctt gaa acg cat tat ttt ggg gct 505
Ile Ser Glu Ser Phe Phe Ile Pro Leu Glu Thr His Tyr Phe Gly Ala
35 40 45

gtg agg gaa aaa gat ttg atc gct ata aat agg aat tcg gct aag gat	553
Val Arg Glu Lys Asp Leu Ile Ala Ile Asn Arg Asn Ser Ala Lys Asp	
50 55 60	
tta tac gaa ttg cgc caa atg cat gca aaa tct atc ggc atc gcc aac	601
Leu Tyr Glu Leu Arg Gln Met His Ala Lys Ser Ile Gly Ile Ala Asn	
65 70 75	
gct ttc cct aat tta gaa gaa gct caa atc ctt ttt gac aac tac ttt	649
Ala Phe Pro Asn Leu Glu Glu Ala Gln Ile Leu Phe Asp Asn Tyr Phe	
80 85 90	
aac gcc ggg ttt tta gcc tta aat tta aaa tca tgg cgt aaa gaa aat	697
Asn Ala Gly Phe Leu Ala Leu Asn Leu Lys Ser Trp Arg Lys Glu Asn	
95 100 105 110	
ctt gaa aac caa ttg att acc ttt ttc att ttg aaa aat gaa aaa ctt	745
Leu Glu Asn Gln Leu Ile Thr Phe Phe Ile Leu Lys Asn Glu Lys Leu	
115 120 125	
tta ttt aac gat caa gat gct ttg tgt ttt gtg tgc cgt ggg agg att	793
Leu Phe Asn Asp Gln Asp Ala Leu Cys Phe Val Cys Arg Gly Arg Ile	
130 135 140	
tta gaa ttg cct tat cca tac aat gcc cac cct agt ttc ctt gat acg	841
Leu Glu Leu Pro Tyr Pro Tyr Asn Ala His Pro Ser Phe Leu Asp Thr	
145 150 155	
ctc tca ttc cct agc atc aaa gaa gcg cgc atg ctg cat ttt tgg ggc	889
Leu Ser Phe Pro Ser Ile Lys Glu Ala Arg Met Leu His Phe Trp Gly	
160 165 170	
gat aaa ccc tgg aaa ctc tta agc gtc att ggc gcg aaa aaa tgg cat	937
Asp Lys Pro Trp Lys Leu Leu Ser Val Ile Gly Ala Lys Lys Trp His	
175 180 185 190	
gaa gcg ttg atc caa acg cct ttt aaa gac gcc tat ttc aac gct tct	985
Glu Ala Leu Ile Gln Thr Pro Phe Lys Asp Ala Tyr Phe Asn Ala Ser	
195 200 205	
ttt tta gat cac ctc ttt gaa tcc ctt caa aac aag gat aat gag atc	1033
Phe Leu Asp His Leu Phe Glu Ser Leu Gln Asn Lys Asp Asn Glu Ile	
210 215 220	
aaa aga aga gat gaa agg atc att gaa gca ctt caa gca agg gat aaa	1081
Lys Arg Arg Asp Glu Arg Ile Ile Glu Ala Leu Gln Ala Arg Asp Lys	
225 230 235	
atc ctg tct ttt tca gac aag cga cat tct ttt gaa tct ctt ctg ccc	1129
Ile Leu Ser Phe Ser Asp Lys Arg His Ser Phe Glu Ser Leu Leu Pro	
240 245 250	
aag ctt tct tct aaa ctc ctt ata gaa ttt ttg ctt ttt aaa gcc aaa	1177
Lys Leu Ser Ser Lys Leu Leu Ile Glu Phe Leu Leu Phe Lys Ala Lys	
255 260 265 270	

caa aaa gtg aag cga ctg att aaa agg gtt ttt taaaaccctt tttaaactaa 1230
 Gln Lys Val Lys Arg Leu Ile Lys Arg Val Phe
 275 280

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 <213> Helicobacter pylori

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 Glu Ser Phe Phe Ile Pro Leu Glu Thr His Tyr Phe Gly Ala Val Arg
 35 40 45
 Glu Lys Asp Leu Ile Ala Ile Asn Arg Asn Ser Ala Lys Asp Leu Tyr
 50 55 60
 Glu Leu Arg Gln Met His Ala Lys Ser Ile Gly Ile Ala Asn Ala Phe
 65 70 75 80
 Pro Asn Leu Glu Glu Ala Gln Ile Leu Phe Asp Asn Tyr Phe Asn Ala
 85 90 95
 Gly Phe Leu Ala Leu Asn Leu Lys Ser Trp Arg Lys Glu Asn Leu Glu
 100 105 110
 Asn Gln Leu Ile Thr Phe Phe Ile Leu Lys Asn Glu Lys Leu Leu Phe
 115 120 125
 Asn Asp Gln Asp Ala Leu Cys Phe Val Cys Arg Gly Arg Ile Leu Glu
 130 135 140
 Leu Pro Tyr Pro Tyr Asn Ala His Pro Ser Phe Leu Asp Thr Leu Ser
 145 150 155 160
 Phe Pro Ser Ile Lys Glu Ala Arg Met Leu His Phe Trp Gly Asp Lys
 165 170 175
 Pro Trp Lys Leu Leu Ser Val Ile Gly Ala Lys Lys Trp His Glu Ala
 180 185 190
 Leu Ile Gln Thr Pro Phe Lys Asp Ala Tyr Phe Asn Ala Ser Phe Leu
 195 200 205
 Asp His Leu Phe Glu Ser Leu Gln Asn Lys Asp Asn Glu Ile Lys Arg
 210 215 220
 Arg Asp Glu Arg Ile Ile Glu Ala Leu Gln Ala Arg Asp Lys Ile Leu
 225 230 235 240
 Ser Phe Ser Asp Lys Arg His Ser Phe Glu Ser Leu Leu Pro Lys Leu
 245 250 255
 Ser Ser Lys Leu Leu Ile Glu Phe Leu Phe Lys Ala Lys Gln Lys
 260 265 270
 Val Lys Arg Leu Ile Lys Arg Val Phe
 275 280

<210> 283
 <211> 1198
 <212> DNA
 <213> Helicobacter pylori

<220>

<221> CDS

<222> (51)...(1145)

<400> 283

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                                     Met Asp
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cct ttt tta agg gat cat tat ggg aat cct agc tcg ttg cac cag ttt 104
Pro Phe Leu Arg Asp His Tyr Gly Asn Pro Ser Ser Leu His Gln Phe
      5                      10                      15

ggc aca gaa acc cac cca gcc att gca gaa gcg cta gat aag ctt tat 152
Gly Thr Glu Thr His Pro Ala Ile Ala Glu Ala Leu Asp Lys Leu Tyr
      20                      25                      30

aag ggc att aac gct agg gat ata gat gat gtg atc atc act tct tgt 200
Lys Gly Ile Asn Ala Arg Asp Ile Asp Asp Val Ile Ile Thr Ser Cys
      35                      40                      45                      50

gcg aca gaa agc aat aat tgg gtt tta aag ggc gtg tat ttt gat gaa 248
Ala Thr Glu Ser Asn Asn Trp Val Leu Lys Gly Val Tyr Phe Asp Glu
                        55                      60                      65

tgc ttg aaa aaa ggc aaa aac cat att gta acc acg gtt gca gag cat 296
Cys Leu Lys Lys Gly Lys Asn His Ile Val Thr Thr Val Ala Glu His
                        70                      75                      80

ccg gcg gtg cga tcc act tgc aat ttt tta gaa agc ttg ggg gtg gag 344
Pro Ala Val Arg Ser Thr Cys Asn Phe Leu Glu Ser Leu Gly Val Glu
      85                      90                      95

gtt act tac ttg ccc att aat gag cat ggg agc atc acc gca gag caa 392
Val Thr Tyr Leu Pro Ile Asn Glu His Gly Ser Ile Thr Ala Glu Gln
      100                      105                      110

gtc aaa gaa gcg atc aca gaa aaa acc gct cta gtg agc gtg atg tgg 440
Val Lys Glu Ala Ile Thr Glu Lys Thr Ala Leu Val Ser Val Met Trp
      115                      120                      125                      130

gcg aat aat gaa acc ggt ctc att ttc cct att gaa gaa att ggg gct 488
Ala Asn Asn Glu Thr Gly Leu Ile Phe Pro Ile Glu Glu Ile Gly Ala
                        135                      140                      145

att tgt aaa gaa aag ggc gtg ttg ttc cat acc gat gcc gtg caa gcg 536
Ile Cys Lys Glu Lys Gly Val Leu Phe His Thr Asp Ala Val Gln Ala
      150                      155                      160

att ggt aaa atc cct gta gat gtg tta aaa gcg aat gca gat ttc ctt 584
Ile Gly Lys Ile Pro Val Asp Val Leu Lys Ala Asn Ala Asp Phe Leu
      165                      170                      175

tct ttt agc gcg cac aag ttt cat ggg cct aaa ggc att ggg ggg ttg 632
Ser Phe Ser Ala His Lys Phe His Gly Pro Lys Gly Ile Gly Gly Leu
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180	185	190	
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Tyr Ile Arg Ser Gly Val Gly Leu Thr Pro Leu Phe His Gly Gly Glu			
195	200	205	210
cat atg aat ggc agg cgc agc ggg act ttg aat gtg cct tat att gtg			728
His Met Asn Gly Arg Arg Ser Gly Thr Leu Asn Val Pro Tyr Ile Val			
	215	220	225
gga atg ggc gaa gcg atg aaa tta gcc gta gag cat tta gac tat gaa			776
Gly Met Gly Glu Ala Met Lys Leu Ala Val Glu His Leu Asp Tyr Glu			
	230	235	240
aaa gaa gtg gtg ggg aaa ttg cgc gac aaa tta gaa gaa gcg ctt ttg			824
Lys Glu Val Val Gly Lys Leu Arg Asp Lys Leu Glu Glu Ala Leu Leu			
	245	250	255
aaa atc cct gat gtg atg gtg gtg ggc gat aga atc cat cgt gtg cct			872
Lys Ile Pro Asp Val Met Val Val Gly Asp Arg Ile His Arg Val Pro			
	260	265	270
aac acg act tta gtc agc gtg aga ggg att gaa gga gag gcc atg ctg			920
Asn Thr Thr Leu Val Ser Val Arg Gly Ile Glu Gly Glu Ala Met Leu			
	275	280	285
tgg gat tta aac cgc tct aat atc gcc gct tcc aca ggg agc gcg tgc			968
Trp Asp Leu Asn Arg Ser Asn Ile Ala Ala Ser Thr Gly Ser Ala Cys			
	295	300	305
gcg agt gag gat tta gag gct aat ccg gtg atg gta gcg att gga gcg			1016
Ala Ser Glu Asp Leu Glu Ala Asn Pro Val Met Val Ala Ile Gly Ala			
	310	315	320
agt aag gaa ttg gct cat acc gct atc agg ctt tca ttg agc cgt ttt			1064
Ser Lys Glu Leu Ala His Thr Ala Ile Arg Leu Ser Leu Ser Arg Phe			
	325	330	335
aac acg gaa gct gaa att gac aaa acg att gaa gtt ttc tct caa gcg			1112
Asn Thr Glu Ala Glu Ile Asp Lys Thr Ile Glu Val Phe Ser Gln Ala			
	340	345	350
gct gta agg ttg aga aat att tca agc tct tat taaaaagaat ataaaggaat			1165
Ala Val Arg Leu Arg Asn Ile Ser Ser Ser Tyr			
	355	360	365
caaatggca aaacatgatt tagtgggttc ggt			1198
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<212> PRT			
<213> Helicobacter pylori			
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Leu	Tyr	Lys	Gly	Ile	Asn	Ala	Arg	Asp	Ile	Asp	Asp	Val	Ile	Ile	Thr
		35					40					45			
Ser	Cys	Ala	Thr	Glu	Ser	Asn	Asn	Trp	Val	Leu	Lys	Gly	Val	Tyr	Phe
	50					55					60				
Asp	Glu	Cys	Leu	Lys	Lys	Gly	Lys	Asn	His	Ile	Val	Thr	Thr	Val	Ala
65					70					75					80
Glu	His	Pro	Ala	Val	Arg	Ser	Thr	Cys	Asn	Phe	Leu	Glu	Ser	Leu	Gly
			85						90					95	
Val	Glu	Val	Thr	Tyr	Leu	Pro	Ile	Asn	Glu	His	Gly	Ser	Ile	Thr	Ala
			100					105					110		
Glu	Gln	Val	Lys	Glu	Ala	Ile	Thr	Glu	Lys	Thr	Ala	Leu	Val	Ser	Val
		115					120					125			
Met	Trp	Ala	Asn	Asn	Glu	Thr	Gly	Leu	Ile	Phe	Pro	Ile	Glu	Glu	Ile
	130					135					140				
Gly	Ala	Ile	Cys	Lys	Glu	Lys	Gly	Val	Leu	Phe	His	Thr	Asp	Ala	Val
145				150						155					160
Gln	Ala	Ile	Gly	Lys	Ile	Pro	Val	Asp	Val	Leu	Lys	Ala	Asn	Ala	Asp
			165					170					175		
Phe	Leu	Ser	Phe	Ser	Ala	His	Lys	Phe	His	Gly	Pro	Lys	Gly	Ile	Gly
		180						185					190		
Gly	Leu	Tyr	Ile	Arg	Ser	Gly	Val	Gly	Leu	Thr	Pro	Leu	Phe	His	Gly
	195					200					205				
Gly	Glu	His	Met	Asn	Gly	Arg	Arg	Ser	Gly	Thr	Leu	Asn	Val	Pro	Tyr
	210				215						220				
Ile	Val	Gly	Met	Gly	Glu	Ala	Met	Lys	Leu	Ala	Val	Glu	His	Leu	Asp
225				230						235					240
Tyr	Glu	Lys	Glu	Val	Val	Gly	Lys	Leu	Arg	Asp	Lys	Leu	Glu	Glu	Ala
			245					250					255		
Leu	Leu	Lys	Ile	Pro	Asp	Val	Met	Val	Val	Gly	Asp	Arg	Ile	His	Arg
		260					265						270		
Val	Pro	Asn	Thr	Thr	Leu	Val	Ser	Val	Arg	Gly	Ile	Glu	Gly	Glu	Ala
		275					280					285			
Met	Leu	Trp	Asp	Leu	Asn	Arg	Ser	Asn	Ile	Ala	Ala	Ser	Thr	Gly	Ser
	290				295					300					
Ala	Cys	Ala	Ser	Glu	Asp	Leu	Glu	Ala	Asn	Pro	Val	Met	Val	Ala	Ile
305					310					315					320
Gly	Ala	Ser	Lys	Glu	Leu	Ala	His	Thr	Ala	Ile	Arg	Leu	Ser	Leu	Ser
			325					330					335		
Arg	Phe	Asn	Thr	Glu	Ala	Glu	Ile	Asp	Lys	Thr	Ile	Glu	Val	Phe	Ser
		340						345					350		
Gln	Ala	Ala	Val	Arg	Leu	Arg	Asn	Ile	Ser	Ser	Ser	Tyr			
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 <211> 1273
 <212> DNA
 <213> Helicobacter pylori

<220>
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 <222> (51)...(1220)

<400> 285

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Lys Lys Gly Met Phe Glu Lys Ile Gln Lys Glu Trp Leu Ser Asn Ile	
5 10 15	
caa aag gat ttg ttg tct ggt ttt gtg gtg ggg ctt tct gtg atc cca	152
Gln Lys Asp Leu Leu Ser Gly Phe Val Val Gly Leu Ser Val Ile Pro	
20 25 30	
gag acg gcc ggc ttt gcg atc atg gtg ggt tta gat gtg ggc gtg gcg	200
Glu Thr Ala Gly Phe Ala Ile Met Val Gly Leu Asp Val Gly Val Ala	
35 40 45 50	
ttt tat acg acc ttt tac atg gct ttt gtt ttg tct ctt ttt ggg gct	248
Phe Tyr Thr Thr Phe Tyr Met Ala Phe Val Leu Ser Leu Phe Gly Ala	
55 60 65	
aga aag gcg atg att agc gca gcg gcc ggc tca gtg gcg ctc att tta	296
Arg Lys Ala Met Ile Ser Ala Ala Ala Gly Ser Val Ala Leu Ile Leu	
70 75 80	
gtg ggc gtg gtt aaa aac tat ggg ctt gaa tac gcg ggc gtg gcg act	344
Val Gly Val Val Lys Asn Tyr Gly Leu Glu Tyr Ala Gly Val Ala Thr	
85 90 95	
ctt atg gca ggg gtg ttg caa att ctt tta ggc tat ttg aaa ata ggg	392
Leu Met Ala Gly Val Leu Gln Ile Leu Leu Gly Tyr Leu Lys Ile Gly	
100 105 110	
aat ctt ttg agg ttt atc ccc caa tca gtg atg tat ggc ttt gtg aac	440
Asn Leu Leu Arg Phe Ile Pro Gln Ser Val Met Tyr Gly Phe Val Asn	
115 120 125 130	
gcg cta ggc att ttg ctt tta atg gag caa ttc aaa ttc ctt caa aac	488
Ala Leu Gly Ile Leu Leu Leu Met Glu Gln Phe Lys Phe Leu Gln Asn	
135 140 145	
caa aat ttg ggg gtg ttt gtc ttg ctc gct att ggg ata ctc atc att	536
Gln Asn Leu Gly Val Phe Val Leu Leu Ala Ile Gly Ile Leu Ile Ile	
150 155 160	
tat ctt ttt cct cta atc act aaa aaa atc ccc tct aat ctg att tgt	584
Tyr Leu Phe Pro Leu Ile Thr Lys Lys Ile Pro Ser Asn Leu Ile Cys	
165 170 175	
atc ctt ata gtg agc gcg atc gct tta att ttt gat atg cat gcg ccg	632
Ile Leu Ile Val Ser Ala Ile Ala Leu Ile Phe Asp Met His Ala Pro	
180 185 190	
aat ttg ggg agc att gag caa ggg gtt tca ggc ttt cat ttc atc att	680
Asn Leu Gly Ser Ile Glu Gln Gly Val Ser Gly Phe His Phe Ile Ile	

195	200	205	210	
atc ccc aaa aat ttg gat ttt aaa ata atg ata gag ttg ttg cct tac				728
Ile Pro Lys Asn Leu Asp Phe Lys Ile Met Ile Glu Leu Leu Pro Tyr	215	220	225	
gct ctt tct tta gca cta gtg gga acg ata gaa agc tta ttg acg gct				776
Ala Leu Ser Leu Ala Leu Val Gly Thr Ile Glu Ser Leu Leu Thr Ala	230	235	240	
aaa act tta gat gtg att tta aaa gac ggc gtg agc gat aaa aat aaa				824
Lys Thr Leu Asp Val Ile Leu Lys Asp Gly Val Ser Asp Lys Asn Lys	245	250	255	
gaa act aaa gcg caa ggc ttg ggg aat atc atc tca ggg ctt ttg ggg				872
Glu Thr Lys Ala Gln Gly Leu Gly Asn Ile Ile Ser Gly Leu Leu Gly	260	265	270	
gga atg aca ggg tgc gct tta gtg ggg cag tct atc att aac gca aaa				920
Gly Met Thr Gly Cys Ala Leu Val Gly Gln Ser Ile Ile Asn Ala Lys	275	280	285	290
tcc ggg gct aaa aca agg ctt tct act ttt ttt gcc ggc ttt tct tta				968
Ser Gly Ala Lys Thr Arg Leu Ser Thr Phe Phe Ala Gly Phe Ser Leu	295	300	305	
atg gtg ctc ata tta gtg ttt aat gaa tat gtg gtt aag atc ccc att				1016
Met Val Leu Ile Leu Val Phe Asn Glu Tyr Val Val Lys Ile Pro Ile	310	315	320	
gtg gcg gtt gtg gcg gta atg gtg atg att tct ttc acc act ttt aat				1064
Val Ala Val Val Ala Val Met Val Met Ile Ser Phe Thr Thr Phe Asn	325	330	335	
ttc caa tcc att att aac att aaa aaa atc aag ctc tat gac acg ctc				1112
Phe Gln Ser Ile Ile Asn Ile Lys Lys Ile Lys Leu Tyr Asp Thr Leu	340	345	350	
aac atg ctc tta gtc gtg gcg gtg gtt tta tac acg cat aat tta gcg				1160
Asn Met Leu Leu Val Val Ala Val Val Leu Tyr Thr His Asn Leu Ala	355	360	365	370
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Ile Gly Val Val Val Gly Val Leu Val Asn Ala Leu Trp Ile Lys Ser	375	380	385	
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<213> Helicobacter pylori

<400> 286

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			20					25					30			
Ile	Pro	Glu	Thr	Ala	Gly	Phe	Ala	Ile	Met	Val	Gly	Leu	Asp	Val	Gly	
		35					40					45				
Val	Ala	Phe	Tyr	Thr	Thr	Phe	Tyr	Met	Ala	Phe	Val	Leu	Ser	Leu	Phe	
	50					55					60					
Gly	Ala	Arg	Lys	Ala	Met	Ile	Ser	Ala	Ala	Ala	Gly	Ser	Val	Ala	Leu	
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Ile	Leu	Val	Gly	Val	Val	Lys	Asn	Tyr	Gly	Leu	Glu	Tyr	Ala	Gly	Val	
				85					90					95		
Ala	Thr	Leu	Met	Ala	Gly	Val	Leu	Gln	Ile	Leu	Leu	Gly	Tyr	Leu	Lys	
			100						105				110			
Ile	Gly	Asn	Leu	Leu	Arg	Phe	Ile	Pro	Gln	Ser	Val	Met	Tyr	Gly	Phe	
		115					120					125				
Val	Asn	Ala	Leu	Gly	Ile	Leu	Leu	Leu	Met	Glu	Gln	Phe	Lys	Phe	Leu	
	130					135					140					
Gln	Asn	Gln	Asn	Leu	Gly	Val	Phe	Val	Leu	Leu	Ala	Ile	Gly	Ile	Leu	
145					150					155					160	
Ile	Ile	Tyr	Leu	Phe	Pro	Leu	Ile	Thr	Lys	Lys	Ile	Pro	Ser	Asn	Leu	
				165					170					175		
Ile	Cys	Ile	Leu	Ile	Val	Ser	Ala	Ile	Ala	Leu	Ile	Phe	Asp	Met	His	
		180						185					190			
Ala	Pro	Asn	Leu	Gly	Ser	Ile	Glu	Gln	Gly	Val	Ser	Gly	Phe	His	Phe	
		195					200					205				
Ile	Ile	Ile	Pro	Lys	Asn	Leu	Asp	Phe	Lys	Ile	Met	Ile	Glu	Leu	Leu	
	210					215					220					
Pro	Tyr	Ala	Leu	Ser	Leu	Ala	Leu	Val	Gly	Thr	Ile	Glu	Ser	Leu	Leu	
225					230					235					240	
Thr	Ala	Lys	Thr	Leu	Asp	Val	Ile	Leu	Lys	Asp	Gly	Val	Ser	Asp	Lys	
				245					250					255		
Asn	Lys	Glu	Thr	Lys	Ala	Gln	Gly	Leu	Gly	Asn	Ile	Ile	Ser	Gly	Leu	
			260					265					270			
Leu	Gly	Gly	Met	Thr	Gly	Cys	Ala	Leu	Val	Gly	Gln	Ser	Ile	Ile	Asn	
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Ala	Lys	Ser	Gly	Ala	Lys	Thr	Arg	Leu	Ser	Thr	Phe	Phe	Ala	Gly	Phe	
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Pro	Ile	Val	Ala	Val	Ala	Val	Met	Val	Met	Ile	Ser	Phe	Thr	Thr		
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Phe	Asn	Phe	Gln	Ser	Ile	Ile	Asn	Ile	Lys	Lys	Ile	Lys	Leu	Tyr	Asp	
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Thr	Leu	Asn	Met	Leu	Leu	Val	Val	Ala	Val	Val	Leu	Tyr	Thr	His	Asn	
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 Met Ser Leu Pro Lys Gly Ala Lys Val
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 Gly Thr Thr Ser Leu Arg Arg Ser Met Gln Ile Lys Leu Lys Arg Gln
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 Asp Leu Asp Thr Glu Ser Leu Arg Gly Asn Val Gln Thr Arg Leu Lys
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 Lys Leu Glu Cys Gly Glu Phe Asp Ala Ile Ile Leu Ala Glu Ala Gly
 45 50 55
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 Val Glu Glu Met Ile Pro Ser Met Gly Gln Gly Ala Leu Gly Val Glu
 75 80 85
 atg ctc aaa aac cac aag cat ttt gcc acg ctt caa aaa ctc aac gac 700
 Met Leu Lys Asn His Lys His Phe Ala Thr Leu Gln Lys Leu Asn Asp
 90 95 100 105
 gag aaa agc gcg ttt tgc tgc cgt tta gaa agg gag ttt atc aag ggg 748
 Glu Lys Ser Ala Phe Cys Cys Arg Leu Glu Arg Glu Phe Ile Lys Gly
 110 115 120
 ctt aat gga ggg tgt cag atc cct ata ggc gtg cat gcg agt tta atg 796
 Leu Asn Gly Gly Cys Gln Ile Pro Ile Gly Val His Ala Ser Leu Met
 125 130 135
 ggc gat agg gtt aaa atc cag gcg gtt tta ggc ttg cct aac ggg aaa 844
 Gly Asp Arg Val Lys Ile Gln Ala Val Leu Gly Leu Pro Asn Gly Lys
 140 145 150

gaa gtc att act aaa gaa aaa caa ggg gat aaa act aaa gcg ttt gat 892
 Glu Val Ile Thr Lys Glu Lys Gln Gly Asp Lys Thr Lys Ala Phe Asp
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 Gly Ala Lys Tyr Arg Lys Ala Phe Ser Val Glu Glu Met Ile Pro Ser
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 145 150 155 160
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 Phe

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Val Arg Tyr Gln Gly Gly His Asn Ala Gly His Thr Ile Val His Lys				
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Gly Val Lys His Ser Leu His Leu Met Pro Ser Gly Val Leu Tyr Pro				
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aaa tgc aag aac atc att tct agc gcg gtg gtc gtg agc gtt aag gat				303
Lys Cys Lys Asn Ile Ile Ser Ser Ala Val Val Val Ser Val Lys Asp				
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Leu Cys Glu Glu Ile Ser Ala Phe Glu Asp Leu Glu Asn Arg Leu Phe				
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Val Ser Asp Arg Ala His Val Ile Leu Pro Tyr His Ala Lys Lys Asp				
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gct ttt aaa gaa aaa tct caa aac atc ggc acg act aaa aaa ggc ata				447
Ala Phe Lys Glu Lys Ser Gln Asn Ile Gly Thr Thr Lys Lys Gly Ile				
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Gly Pro Cys Tyr Glu Asp Lys Met Ala Arg Ser Gly Ile Arg Met Gly				
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aaa gcc att gag cct ttt aaa aaa gcg tat gat ttg ggc gag aat tac				591
Lys Ala Ile Glu Pro Phe Lys Lys Ala Tyr Asp Leu Gly Glu Asn Tyr				
160		165	170	
gaa aaa gat ttg atg ggg tat ttt aaa act tac gct cca aaa att tgc				639
Glu Lys Asp Leu Met Gly Tyr Phe Lys Thr Tyr Ala Pro Lys Ile Cys				
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ccc ttt atc aaa gac acg aca agc atg ctg ata gaa gcg aat caa aag				687
Pro Phe Ile Lys Asp Thr Thr Ser Met Leu Ile Glu Ala Asn Gln Lys				
190		195	200	205
ggt gaa aaa atc cta tta gaa ggg gca caa ggc acg ctt tta gac att				735
Gly Glu Lys Ile Leu Leu Glu Gly Ala Gln Gly Thr Leu Leu Asp Ile				
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gat tta ggg act tac cct ttt gta aca agc tct aac acc acg agc gct				783

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Ser	Ala	Cys	Val	Ser	Thr	Gly	Leu	Asn	Pro	Lys	Ala	Ile	Asn	Glu	Val		
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Ile	Gly	Ile	Thr	Lys	Ala	Tyr	Ser	Thr	Arg	Val	Gly	Asn	Gly	Pro	Phe		
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Leu	Ala	Leu	Met	Lys	Leu	Asp	Val	Leu	Asp	Gly	Ile	Asp	Ala	Ile	Lys		
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Val	Cys	Val	Ala	Tyr	Glu	Arg	Lys	Gly	Glu	Arg	Leu	Glu	Ile	Phe	Pro		
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Ser	Asp	Leu	Lys	Asp	Cys	Val	Pro	Ile	Tyr	Gln	Thr	Phe	Lys	Gly	Trp		
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Glu	Lys	Ser	Val	Gly	Val	Arg	Lys	Leu	Asp	Asp	Leu	Glu	Pro	Asn	Val		
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Arg	Glu	Tyr	Ile	Arg	Phe	Ile	Glu	Lys	Glu	Val	Gly	Val	Lys	Ile	Arg		
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Leu	Ile	Ser	Thr	Ser	Pro	Glu	Arg	Glu	Asp	Thr	Ile	Phe	Leu				
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Val Leu Ser Val Ser Glu Ile Asn Ala Gln Ile Lys Ala Leu Leu Glu
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gcg act ttt ttg caa gtt agg gtt caa ggg gaa gtg agt aat ttg act      152
Ala Thr Phe Leu Gln Val Arg Val Gln Gly Glu Val Ser Asn Leu Thr
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atc cat aag gtg agc ggc cat gcg tat ttt tcg ctc aaa gac agc cag      200
Ile His Lys Val Ser Gly His Ala Tyr Phe Ser Leu Lys Asp Ser Gln
      35                      40                      45                      50

tcg gtt att aaa tgc gtg ctg ttt aaa ggg aac gct aac agg ctc aaa      248
Ser Val Ile Lys Cys Val Leu Phe Lys Gly Asn Ala Asn Arg Leu Lys
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ttc gct tta aaa gaa ggg cag gaa gtg gtt gtt ttt ggg ggt att agc      296
Phe Ala Leu Lys Glu Gly Gln Glu Val Val Val Phe Gly Gly Ile Ser
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gtg tat gtc cca agg ggg gat tat caa atc aat tgc ttt gaa ata gag      344
Val Tyr Val Pro Arg Gly Asp Tyr Gln Ile Asn Cys Phe Glu Ile Glu
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cct aag gat ata ggt tca tta act tta gct tta gag caa ttg aaa gaa      392
Pro Lys Asp Ile Gly Ser Leu Thr Leu Ala Leu Glu Gln Leu Lys Glu
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Lys Leu Arg Leu Lys Gly Tyr Phe Asp Glu Glu Asn Lys Leu Pro Lys
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ccg cat ttt cct aaa cga gtg gca gtc atc act tct caa aat tca gcc      488
Pro His Phe Pro Lys Arg Val Ala Val Ile Thr Ser Gln Asn Ser Ala
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gct tgg gcg gac atg aaa aag atc gct tcc aaa cga tgg ccg atg tgt      536
Ala Trp Ala Asp Met Lys Lys Ile Ala Ser Lys Arg Trp Pro Met Cys
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Glu Leu Val Cys Ile Asn Thr Leu Met Gln Gly Glu Gly Cys Val Gln

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gat ttg tat tct ttc aat gat gaa aaa atc gct gat gct ctg tat ttg			728
Asp Leu Tyr Ser Phe Asn Asp Glu Lys Ile Ala Asp Ala Leu Tyr Leu			
	215	220	225
gcc aaa acc ttc agc atg tca gct att ggg cat gag agc gat ttt tta			776
Ala Lys Thr Phe Ser Met Ser Ala Ile Gly His Glu Ser Asp Phe Leu			
	230	235	240
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Leu Ser Asp Leu Val Ala Asp Leu Arg Ala Ser Thr Pro Ser Asn Ala			
	245	250	255
atg gaa att tta ctc ccc agc agc gat gaa tgg ttg caa aga ctt gat			872
Met Glu Ile Leu Leu Pro Ser Ser Asp Glu Trp Leu Gln Arg Leu Asp			
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275	280	285	290
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Lys Lys Ala His Leu Glu His Leu Val Ala Ser Leu Lys Arg Leu Ser			
	295	300	305
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Phe Glu Asn Lys His His Leu Asn Ala Leu Lys Leu Glu Lys Leu Lys			
	310	315	320
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Ile Ala Leu Glu Asn Lys Thr Leu Glu Phe Leu Arg Phe Lys Lys Thr			
	325	330	335
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Leu Leu Glu Lys Ile Ser Thr Gln Thr Leu Thr Ser Pro Phe Leu Gln			
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act aaa aca gag cga ttg aac agg cta gaa aac gcc ctt aaa ctc gct			1160
Thr Lys Thr Glu Arg Leu Asn Arg Leu Glu Asn Ala Leu Lys Leu Ala			
355	360	365	370
cat gct aat ttg aaa tta ccc caa ttc ggg gcg ttg gtg agc aaa aat			1208
His Ala Asn Leu Lys Leu Pro Gln Phe Gly Ala Leu Val Ser Lys Asn			
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Pro Lys Pro His Phe Pro Lys Arg Val Ala Val Ile Thr Ser Gln Asn	
130 135 140	
Ser Ala Ala Trp Ala Asp Met Lys Lys Ile Ala Ser Lys Arg Trp Pro	
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Thr Lys Asn Ala Phe Asp Ala Ile Val Val Ala Arg Gly Gly Gly Ser	
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225 230 235 240	
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Ala	Arg	Thr	Tyr	Ser	Gln	Lys	Tyr	Pro	Tyr	Thr	Tyr	Phe	Ser	Ala	Met
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Ser	Lys	Ala	Lys	Glu	Val	Leu	Cys	Glu	Lys	Gln	Ala	Phe	Glu	Gln	Ile		
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Cys	Val	Tyr	Val	Glu	Ser	Lys	Asp	Phe	Leu	Lys	Asp	Phe	Lys	Arg	Phe		
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Asp	Phe	Val	Arg	Asp	Asn	Leu	Glu	Asn	Lys	Pro	Leu	Leu	Tyr	Leu	Leu		
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Leu	Glu	Arg	Ser	Arg	Phe	Tyr	Phe	Leu	Ile	Ala	Asp	Lys	Lys	Glu	Ile		
	165					170						175					
ttt	tta	gcc	aaa	tcc	gtg	ttt	tta	gaa	gaa	caa	cct	gaa	gag	ttt	ata	632	
Phe	Leu	Ala	Lys	Ser	Val	Phe	Leu	Glu	Glu	Gln	Pro	Glu	Glu	Phe	Ile		
	180					185					190						
gag	agc	aaa	gaa	gaa	gat	ttt	atg	gga	atg	gat	aat	gag	gct	gtg	gat	680	
Glu	Ser	Lys	Glu	Glu	Asp	Phe	Met	Gly	Met	Asp	Asn	Glu	Ala	Val	Asp		
	195				200					205					210		
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Leu	Phe	Leu	Ser	Glu	Ile	Gln	Glu	Asp	Ile	Asp	Ser	Leu	Glu	Glu	Ala		
				215					220						225		
ata	ggc	cta	gac	agc	agt	aag	gat	aat	agc	gaa	aaa	ata	aca	gag	gac	776	
Ile	Gly	Leu	Asp	Ser	Ser	Lys	Asp	Asn	Ser	Glu	Lys	Ile	Thr	Glu	Asp		
			230					235						240			
gct	tat	agt	ttg	att	gaa	ggc	atg	acg	aat	atc	ccc	tta	att	gca	gat	824	
Ala	Tyr	Ser	Leu	Ile	Glu	Gly	Met	Thr	Asn	Ile	Pro	Leu	Ile	Ala	Asp		
		245					250					255					
gtt	ttg	caa	gag	gga	ttg	cgt	ggc	gtc	tat	cat	tct	aga	gag	ata	gac	872	
Val	Leu	Gln	Glu	Gly	Leu	Arg	Gly	Val	Tyr	His	Ser	Arg	Glu	Ile	Asp		
	260					265					270						
ttt	gta	gaa	aaa	gtg	gtt	gtt	tta	gac	agc	tgt	caa	atc	cac	caa	aaa	920	
Phe	Val	Glu	Lys	Val	Val	Val	Leu	Asp	Ser	Cys	Gln	Ile	His	Gln	Lys		
	275				280					285					290		
gcg	tta	atg	cat	ttg	caa	gaa	act	ttg	atg	ata	gaa	gtg	gat	agg	ctt	968	
Ala	Leu	Met	His	Leu	Gln	Glu	Thr	Leu	Met	Ile	Glu	Val	Asp	Arg	Leu		
				295					300					305			

gat ttt tct tta gtg gag cgc ttg aac att tta gcg cgc atg gag aat 1016
 Asp Phe Ser Leu Val Glu Arg Leu Asn Ile Leu Ala Arg Met Glu Asn
 310 315 320

gaa aag cat gcg ttt tagttacatt gagccaagag cgaaataacct tatcagcaag 1071
 Glu Lys His Ala Phe
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cttttctaaaa tt 1083

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<211> 327

<212> PRT

<213> Helicobacter pylori

<400> 296

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 20 25 30
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 35 40 45
 Glu Thr Lys Val Glu Thr Lys Asn Gly Glu Val Pro Ile Gln Ala Leu
 50 55 60
 Lys Ile Ala Arg Thr Tyr Ser Gln Lys Tyr Pro Tyr Thr Tyr Phe Ser
 65 70 75 80
 Ala Met Ser Lys Ala Lys Glu Val Leu Cys Glu Lys Gln Ala Phe Glu
 85 90 95
 Gln Ile Lys Gln Glu Asn Gln Asp Tyr His Ala Cys Glu Val Asn Gln
 100 105 110
 Lys Tyr Cys Val Tyr Val Glu Ser Lys Asp Phe Leu Lys Asp Phe Lys
 115 120 125
 Arg Phe Lys Ile Gln Asp Val Asp Phe Leu Phe Ser Pro Phe Ser Leu
 130 135 140
 Ile Tyr Asp Phe Val Arg Asp Asn Leu Glu Asn Lys Pro Leu Leu Tyr
 145 150 155 160
 Leu Leu Leu Glu Arg Ser Arg Phe Tyr Phe Leu Ile Ala Asp Lys Lys
 165 170 175
 Glu Ile Phe Leu Ala Lys Ser Val Phe Leu Glu Glu Gln Pro Glu Glu
 180 185 190
 Phe Ile Glu Ser Lys Glu Glu Asp Phe Met Gly Met Asp Asn Glu Ala
 195 200 205
 Val Asp Leu Phe Leu Ser Glu Ile Gln Glu Asp Ile Asp Ser Leu Glu
 210 215 220
 Glu Ala Ile Gly Leu Asp Ser Ser Lys Asp Asn Ser Glu Lys Ile Thr
 225 230 235 240
 Glu Asp Ala Tyr Ser Leu Ile Glu Gly Met Thr Asn Ile Pro Leu Ile
 245 250 255
 Ala Asp Val Leu Gln Glu Gly Leu Arg Gly Val Tyr His Ser Arg Glu
 260 265 270
 Ile Asp Phe Val Glu Lys Val Val Val Leu Asp Ser Cys Gln Ile His
 275 280 285
 Gln Lys Ala Leu Met His Leu Gln Glu Thr Leu Met Ile Glu Val Asp
 290 295 300
 Arg Leu Asp Phe Ser Leu Val Glu Arg Leu Asn Ile Leu Ala Arg Met

tta gtg ggc ttg ccc gct ccc tta aaa cgc ctt gaa gaa tcc att aaa	540
Leu Val Gly Leu Pro Ala Pro Leu Lys Arg Leu Glu Glu Ser Ile Lys	
150 155 160	
aga agt gct aaa tgg gcg aat atg agc cta gaa tac cac aaa gaa aaa	588
Arg Ser Ala Lys Trp Ala Asn Met Ser Leu Glu Tyr His Lys Glu Lys	
165 170 175	
aac cgc ccg agc aac aac ctt ttt gcc att atc cag ggc ggg acg cat	636
Asn Arg Pro Ser Asn Asn Leu Phe Ala Ile Ile Gln Gly Gly Thr His	
180 185 190	
ttg aaa atg cgc agc ctt agc gtg gga tta acg cat gag ggt ttt gat	684
Leu Lys Met Arg Ser Leu Ser Val Gly Leu Thr His Glu Gly Phe Asp	
195 200 205	
ggc tac gct ata ggc ggt tta gcg gtg ggg gaa agc gct gat gaa atg	732
Gly Tyr Ala Ile Gly Gly Leu Ala Val Gly Glu Ser Ala Asp Glu Met	
210 215 220 225	
cta gaa acc atc gcg cac acc gcc ccc ttg ctc ccc aaa gac aag cct	780
Leu Glu Thr Ile Ala His Thr Ala Pro Leu Leu Pro Lys Asp Lys Pro	
230 235 240	
cgc tac tta atg ggc gta ggc acg cct gaa aat atc cta gac gct atc	828
Arg Tyr Leu Met Gly Val Gly Thr Pro Glu Asn Ile Leu Asp Ala Ile	
245 250 255	
agt ttg ggg gtg gat atg ttt gat tgc gtg atg ccc acc aga aac gcc	876
Ser Leu Gly Val Asp Met Phe Asp Cys Val Met Pro Thr Arg Asn Ala	
260 265 270	
aga aac gcc acc ctt ttc acg cat tct ggc aaa att tct atc aaa aac	924
Arg Asn Ala Thr Leu Phe Thr His Ser Gly Lys Ile Ser Ile Lys Asn	
275 280 285	
gcg ccc tat aaa ttg gat aat acc cct att gaa gaa aat tgc gca tgt	972
Ala Pro Tyr Lys Leu Asp Asn Thr Pro Ile Glu Glu Asn Cys Ala Cys	
290 295 300 305	
tat gct tgc aaa cgc tat tct aaa gcc tat ttg cac cat tta ttt agg	1020
Tyr Ala Cys Lys Arg Tyr Ser Lys Ala Tyr Leu His His Leu Phe Arg	
310 315 320	
gct aaa gaa ctc act tac gct cgt ttg gcc agc ttg cac aat ttg cat	1068
Ala Lys Glu Leu Thr Tyr Ala Arg Leu Ala Ser Leu His Asn Leu His	
325 330 335	
ttt tat tta gag ctg gtg aag aac gcc aga aac gcc att tta gaa aag	1116
Phe Tyr Leu Glu Leu Val Lys Asn Ala Arg Asn Ala Ile Leu Glu Lys	
340 345 350	
cgg ttt ttg agt ttt aaa aaa gaa ttt ttg gag aaa tac aac tcc cgc	1164
Arg Phe Leu Ser Phe Lys Lys Glu Phe Leu Glu Lys Tyr Asn Ser Arg	
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 Ser His
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<211> 371

<212> PRT

<213> Helicobacter pylori

<400> 298

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		20						25					30		
Gly	Thr	Gln	Gly	Cys	Ile	Lys	Ser	Leu	Asp	Ala	Thr	Asp	Ala	Gln	Glu
		35					40					45			
Ile	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ala	Asn	Thr	Tyr	His	Met	Tyr	Leu
	50					55					60				
Arg	Pro	Gly	Glu	Lys	Val	Val	Glu	Glu	Leu	Gly	Gly	Leu	His	Arg	Phe
65					70					75				80	
Ala	Gln	Phe	Tyr	Gly	Ser	Phe	Leu	Thr	Asp	Ser	Gly	Gly	Phe	Gln	Ala
				85					90					95	
Phe	Ser	Leu	Ser	Asp	Asn	Val	Lys	Leu	Gln	Glu	Asp	Gly	Ile	Val	Phe
		100						105					110		
Lys	Ser	His	Ile	Asp	Gly	Ser	Lys	His	Leu	Phe	Thr	Pro	Ala	Lys	Val
		115					120						125		
Leu	Asp	Ile	Gln	Tyr	Ser	Leu	Asn	Ser	Asp	Ile	Met	Met	Val	Leu	Asp
	130					135					140				
Asp	Leu	Val	Gly	Leu	Pro	Ala	Pro	Leu	Lys	Arg	Leu	Glu	Glu	Ser	Ile
145					150					155					160
Lys	Arg	Ser	Ala	Lys	Trp	Ala	Asn	Met	Ser	Leu	Glu	Tyr	His	Lys	Glu
				165					170					175	
Lys	Asn	Arg	Pro	Ser	Asn	Asn	Leu	Phe	Ala	Ile	Ile	Gln	Gly	Gly	Thr
			180					185					190		
His	Leu	Lys	Met	Arg	Ser	Leu	Ser	Val	Gly	Leu	Thr	His	Glu	Gly	Phe
		195					200					205			
Asp	Gly	Tyr	Ala	Ile	Gly	Gly	Leu	Ala	Val	Gly	Glu	Ser	Ala	Asp	Glu
	210					215					220				
Met	Leu	Glu	Thr	Ile	Ala	His	Thr	Ala	Pro	Leu	Leu	Pro	Lys	Asp	Lys
225					230					235					240
Pro	Arg	Tyr	Leu	Met	Gly	Val	Gly	Thr	Pro	Glu	Asn	Ile	Leu	Asp	Ala
			245						250					255	
Ile	Ser	Leu	Gly	Val	Asp	Met	Phe	Asp	Cys	Val	Met	Pro	Thr	Arg	Asn
		260						265					270		
Ala	Arg	Asn	Ala	Thr	Leu	Phe	Thr	His	Ser	Gly	Lys	Ile	Ser	Ile	Lys
		275						280					285		
Asn	Ala	Pro	Tyr	Lys	Leu	Asp	Asn	Thr	Pro	Ile	Glu	Glu	Asn	Cys	Ala
	290					295					300				
Cys	Tyr	Ala	Cys	Lys	Arg	Tyr	Ser	Lys	Ala	Tyr	Leu	His	His	Leu	Phe
305					310					315				320	
Arg	Ala	Lys	Glu	Leu	Thr	Tyr	Ala	Arg	Leu	Ala	Ser	Leu	His	Asn	Leu
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His Phe Tyr Leu Glu Leu Val Lys Asn Ala Arg Asn Ala Ile Leu Glu  
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Lys Arg Phe Leu Ser Phe Lys Lys Glu Phe Leu Glu Lys Tyr Asn Ser  
      355              360              365  
Arg Ser His  
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ttt gaa gag aga aaa att tta gag caa gtg ggc ctt tta tgc tct aaa	584
Phe Glu Glu Arg Lys Ile Leu Glu Gln Val Gly Leu Leu Cys Ser Lys	
165 170 175	
ggg gtt caa gaa gtg gtt tta acc ggc acc aat gtg ggg agc tat ggg	632
Gly Val Gln Glu Val Val Leu Thr Gly Thr Asn Val Gly Ser Tyr Gly	
180 185 190	
aaa gat aga gga agc aat atc gcg cga ttg att aaa aaa tta agc cag	680
Lys Asp Arg Gly Ser Asn Ile Ala Arg Leu Ile Lys Lys Leu Ser Gln	
195 200 205 210	
atc gct gga tta aaa cgc ata agg att ggg agc tta gaa cct aat caa	728
Ile Ala Gly Leu Lys Arg Ile Arg Ile Gly Ser Leu Glu Pro Asn Gln	
215 220 225	
att aac gat gaa ttt tta gag ctt tta gaa gag gat ttt tta gaa aaa	776
Ile Asn Asp Glu Phe Leu Glu Leu Leu Glu Glu Asp Phe Leu Glu Lys	
230 235 240	
cat ttg cat atc gct tta cag cac agc cat gat ctc atg cta gag agg	824
His Leu His Ile Ala Leu Gln His Ser His Asp Leu Met Leu Glu Arg	
245 250 255	
atg aat cga aga aac cgc act aaa agc gat agg gaa tta tta gaa aca	872
Met Asn Arg Arg Asn Arg Thr Lys Ser Asp Arg Glu Leu Leu Glu Thr	
260 265 270	
atc gct tct aag aat ttt gct att ggc acg gat ttt att gtg ggg cat	920
Ile Ala Ser Lys Asn Phe Ala Ile Gly Thr Asp Phe Ile Val Gly His	
275 280 285 290	
ccg ggc gag agc gga agc gtt ttt gaa aaa gcg ttt aaa aat tta gaa	968
Pro Gly Glu Ser Gly Ser Val Phe Glu Lys Ala Phe Lys Asn Leu Glu	
295 300 305	
agc ttg cct tta acg cac atc cac cct ttt att tac agc aaa cga aaa	1016
Ser Leu Pro Leu Thr His Ile His Pro Phe Ile Tyr Ser Lys Arg Lys	
310 315 320	
gac acc ccc tct agc ttg atg act gat agc gtg agt ttg gaa gat tct	1064
Asp Thr Pro Ser Ser Leu Met Thr Asp Ser Val Ser Leu Glu Asp Ser	
325 330 335	
aaa aag cgt ttg aat gcg att aaa gat ttg att ttt cat aaa aat aag	1112
Lys Lys Arg Leu Asn Ala Ile Lys Asp Leu Ile Phe His Lys Asn Lys	
340 345 350	

gcg ttc agg caa ttg cag ctc aag ctc aat acg cct cta aaa gcc tta 1160
 Ala Phe Arg Gln Leu Gln Leu Lys Leu Asn Thr Pro Leu Lys Ala Leu
 355 360 365 370

gtg gaa gtg caa aaa gac ggc gaa ttt aaa gcc tta gat caa ttt ttc 1208
 Val Glu Val Gln Lys Asp Gly Glu Phe Lys Ala Leu Asp Gln Phe Phe
 375 380 385

aac ccc att aaa atc aaa agc gat aag cct cta agg gct agt ttt tta 1256
 Asn Pro Ile Lys Ile Lys Ser Asp Lys Pro Leu Arg Ala Ser Phe Leu
 390 395 400

gaa atc aaa gag tat gaa att aag gag agg gaa aat cat gcc gtt ttc 1304
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<211> 418

<212> PRT

<213> Helicobacter pylori

<400> 300

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 20 25 30
 Glu Glu Gln Glu Ala Asp Ile Ile Ile Asn Ser Cys Thr Val Thr
 35 40 45
 Asn Gly Ala Asp Ser Ala Val Arg Ser Tyr Ala Lys Lys Met Ala Arg
 50 55 60
 Leu Asp Lys Glu Val Leu Phe Thr Gly Cys Gly Val Lys Thr Gln Gly
 65 70 75 80
 Lys Glu Leu Phe Glu Lys Gly Phe Leu Lys Gly Val Phe Gly His Asp
 85 90 95
 Asn Lys Glu Lys Ile Asn Ala Leu Leu Gln Glu Lys Lys Arg Phe Phe
 100 105 110
 Ile Asp Asp Asn Leu Glu Asn Lys His Leu Asp Thr Thr Met Val Ser
 115 120 125
 Glu Phe Val Gly Lys Thr Arg Ala Phe Ile Lys Ile Gln Glu Gly Cys
 130 135 140
 Asp Phe Asp Cys Asn Tyr Cys Ile Ile Pro Ser Val Arg Gly Arg Ala
 145 150 155 160
 Arg Ser Phe Glu Glu Arg Lys Ile Leu Glu Gln Val Gly Leu Leu Cys
 165 170 175
 Ser Lys Gly Val Gln Glu Val Val Leu Thr Gly Thr Asn Val Gly Ser
 180 185 190
 Tyr Gly Lys Asp Arg Gly Ser Asn Ile Ala Arg Leu Ile Lys Lys Leu
 195 200 205
 Ser Gln Ile Ala Gly Leu Lys Arg Ile Arg Ile Gly Ser Leu Glu Pro
 210 215 220
 Asn Gln Ile Asn Asp Glu Phe Leu Glu Leu Leu Glu Glu Asp Phe Leu
 225 230 235 240
 Glu Lys His Leu His Ile Ala Leu Gln His Ser His Asp Leu Met Leu

ggt ttt gta gtg tta ctt tat gaa atc att tcg ttt att tat tac aaa 296
 Gly Phe Val Val Leu Leu Tyr Glu Ile Ile Ser Phe Ile Tyr Tyr Lys
 70 75 80
 aga tcg tta gtg tat ttg atc ctt ggc gtg gcg ata ggg gcg ttg tgt 344
 Arg Ser Leu Val Tyr Leu Ile Leu Gly Val Ala Ile Gly Ala Leu Cys
 85 90 95
 ttg ctc ttt gtt ttt tat tac acg cct tat att tta aac gct caa aaa 392
 Leu Leu Phe Val Phe Tyr Tyr Thr Pro Tyr Ile Leu Asn Ala Gln Lys
 100 105 110
 gcg ggc gaa gcc gcg ctt caa agt gct gaa ttt gcc cgc tcg cac gct 440
 Ala Gly Glu Ala Ala Leu Gln Ser Ala Glu Phe Ala Arg Ser His Ala
 115 120 125 130
 caa agc gaa tgg ttg ttt aag gaa ttg ttt gtg ctg gtg tgc gct ttg 488
 Gln Ser Glu Trp Leu Phe Lys Glu Leu Phe Val Leu Val Cys Ala Leu
 135 140 145
 ttt ttt tgg cgt ttg ctt gga aaa aat gtg ctt tagtcccttt gatttaatca 541
 Phe Phe Trp Arg Leu Leu Gly Lys Asn Val Leu
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<212> PRT

<213> *Helicobacter pylori*

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 Lys Ala Ser Ser Val Leu Pro Glu Leu His Leu Thr Pro Phe Glu Ser
 35 40 45
 Gly Lys Leu Met Ala Gln Ile Phe Val Arg Phe Asn Tyr Val Leu Gly
 50 55 60
 Ala Ile Gly Phe Val Val Leu Leu Tyr Glu Ile Ile Ser Phe Ile Tyr
 65 70 75 80
 Tyr Lys Arg Ser Leu Val Tyr Leu Ile Leu Gly Val Ala Ile Gly Ala
 85 90 95
 Leu Cys Leu Leu Phe Val Phe Tyr Tyr Thr Pro Tyr Ile Leu Asn Ala
 100 105 110
 Gln Lys Ala Gly Glu Ala Ala Leu Gln Ser Ala Glu Phe Ala Arg Ser
 115 120 125
 His Ala Gln Ser Glu Trp Leu Phe Lys Glu Leu Phe Val Leu Val Cys
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<220>

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<400> 303

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Phe Gly Asp Phe Lys Tyr Gln Lys Ser Val Lys Lys Leu Thr Ala Thr
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Asn Leu Asn Glu Leu Lys Asn Ala Leu Asp Phe Ile Ser Gln Asn Arg
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ggg aat ggg tat ttt gtg ggg tat ctt tta tat gaa gcg cgc tta gcg 200
Gly Asn Gly Tyr Phe Val Gly Tyr Leu Leu Tyr Glu Ala Arg Leu Ala
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Phe Leu Asp Glu Asn Phe Gln Ser Gln Thr Pro Phe Leu Tyr Phe Glu
              55              60              65

caa ttt tta gaa aga aaa aaa tat tct tta gag cct tta aaa gag cat 296
Gln Phe Leu Glu Arg Lys Lys Tyr Ser Leu Glu Pro Leu Lys Glu His
              70              75              80

gcg ttt tac cct aaa atc cat agt tct tta gat caa aaa act tat ttc 344
Ala Phe Tyr Pro Lys Ile His Ser Ser Leu Asp Gln Lys Thr Tyr Phe
              85              90              95

aag cag ttt aaa gcc gtt aaa gag cgt ctc aaa aac ggc gac acc tat 392
Lys Gln Phe Lys Ala Val Lys Glu Arg Leu Lys Asn Gly Asp Thr Tyr
      100              105              110

caa gtg aat ctc aca atg gat tta ttt tta gac act aaa gcc aaa cca 440
Gln Val Asn Leu Thr Met Asp Leu Phe Leu Asp Thr Lys Ala Lys Pro
      115              120              125              130

aag cgc gtt ttt aag gag gtg gta cac aac caa aac acg cct ttt aag 488
Lys Arg Val Phe Lys Glu Val Val His Asn Gln Asn Thr Pro Phe Lys
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gct ttt ata gaa aat gag ttt ggg agc gtt tta agc ttt tcg ccg gaa 536
Ala Phe Ile Glu Asn Glu Phe Gly Ser Val Leu Ser Phe Ser Pro Glu
              150              155              160

ttg ttt ttt gaa tta gag ttt tta gat aca gcg att aag att att aca 584
Leu Phe Phe Glu Leu Glu Phe Leu Asp Thr Ala Ile Lys Ile Ile Thr
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aaa ccc atg aaa ggc acg atc gct cgc tca aaa aac ccc tta ata gat			632
Lys Pro Met Lys Gly Thr Ile Ala Arg Ser Lys Asn Pro Leu Ile Asp			
180	185	190	
gaa aaa aac cga ttg ttt ttg caa aat gat gac aaa aac aga agc gaa			680
Glu Lys Asn Arg Leu Phe Leu Gln Asn Asp Asp Lys Asn Arg Ser Glu			
195	200	205	210
aat gtg atg att gtg gat tta ttg cgt aac gat ttg agc cgc ttg gcc			728
Asn Val Met Ile Val Asp Leu Leu Arg Asn Asp Leu Ser Arg Leu Ala			
	215	220	225
tta aaa aat agc gtg aaa gtc aat caa ttg ttt gaa atc atc agc ttg			776
Leu Lys Asn Ser Val Lys Val Asn Gln Leu Phe Glu Ile Ile Ser Leu			
	230	235	240
cct agc gtg tat caa atg ata agc gag att gaa gcg aaa ttg ccc cta			824
Pro Ser Val Tyr Gln Met Ile Ser Glu Ile Glu Ala Lys Leu Pro Leu			
	245	250	255
aaa acc agc ttg ttt gag att ttt aag gcg ttg ttc cct tgc ggc tct			872
Lys Thr Ser Leu Phe Glu Ile Phe Lys Ala Leu Phe Pro Cys Gly Ser			
	260	265	270
gtg acc gga tgc cct aaa atc aaa acc atg caa atc att gaa agt tta			920
Val Thr Gly Cys Pro Lys Ile Lys Thr Met Gln Ile Ile Glu Ser Leu			
	275	280	285
gaa aaa cgc cct agg ggg gtg tat tgc ggg gcg ata ggc atg gtt gaa			968
Glu Lys Arg Pro Arg Gly Val Tyr Cys Gly Ala Ile Gly Met Val Glu			
	295	300	305
gaa aaa aaa gcc ctt ttt agc gtg cct atc cgc act tta gaa aaa aga			1016
Glu Lys Lys Ala Leu Phe Ser Val Pro Ile Arg Thr Leu Glu Lys Arg			
	310	315	320
gtg cac gaa aat ttt ttg cat tta ggg gta ggg agt ggg gta act tat			1064
Val His Glu Asn Phe Leu His Leu Gly Val Gly Ser Gly Val Thr Tyr			
	325	330	335
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Lys Ser Lys Ala Pro Lys Glu Tyr Glu Glu Ser Phe Leu Lys Ser Phe			
	340	345	350
ttt gtg atg ccc aaa ata gaa ttt gag att gta gaa acg atg aaa att			1160
Phe Val Met Pro Lys Ile Glu Phe Glu Ile Val Glu Thr Met Lys Ile			
	355	360	365
atc aaa aag gat caa aaa tta gag att aat aat aaa aac gcc cat aaa			1208
Ile Lys Lys Asp Gln Lys Leu Glu Ile Asn Asn Lys Asn Ala His Lys			
	375	380	385
gaa cgc tta atg aat agc act cga tat ttt aac ttt aaa tac gat gaa			1256

Glu Arg Leu Met Asn Ser Thr Arg Tyr Phe Asn Phe Lys Tyr Asp Glu	
390	395 400
aat ctt tta gat ttt gaa tta gaa aaa gaa ggg gtt tta agg gtt tta	1304
Asn Leu Leu Asp Phe Glu Leu Glu Lys Glu Gly Val Leu Arg Val Leu	
405 410 415	
ctc aat aaa aag ggc aag ctc att aaa gaa tac aaa acc tta gag cct	1352
Leu Asn Lys Lys Gly Lys Leu Ile Lys Glu Tyr Lys Thr Leu Glu Pro	
420 425 430	
tta aaa agc cta gaa atc cgt ttg agt gaa gcc ccc att gat aaa cgc	1400
Leu Lys Ser Leu Glu Ile Arg Leu Ser Glu Ala Pro Ile Asp Lys Arg	
435 440 445 450	
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Asn Asp Phe Leu Tyr His Lys Thr Thr Tyr Ala Pro Phe Tyr Gln Lys	
455 460 465	
gct cga gcg ctc att aaa aag ggc gtt atg ttt gat gaa atc ttt tat	1496
Ala Arg Ala Leu Ile Lys Lys Gly Val Met Phe Asp Glu Ile Phe Tyr	
470 475 480	
aac cag gat ttg gaa ctc act gag ggc gct agg agc aat ctt gtt tta	1544
Asn Gln Asp Leu Glu Leu Thr Glu Gly Ala Arg Ser Asn Leu Val Leu	
485 490 495	
gaa atc cat aac agg ctt tta acc cct tat ttt agc gcg ggc gcg tta	1592
Glu Ile His Asn Arg Leu Leu Thr Pro Tyr Phe Ser Ala Gly Ala Leu	
500 505 510	
aac ggg acg ggt gtt gtg ggg ttg tta aaa aag ggt ctt gtt ggg cat	1640
Asn Gly Thr Gly Val Val Gly Leu Leu Lys Lys Gly Leu Val Gly His	
515 520 525 530	
gca cct ttg aaa ttg caa gat ttg caa aaa gcg tct aaa atc tat tgt	1688
Ala Pro Leu Lys Leu Gln Asp Leu Gln Lys Ala Ser Lys Ile Tyr Cys	
535 540 545	
att aac gcg cta tat ggc tta gtg gaa gtg aaa ata aaa taactataaa	1737
Ile Asn Ala Leu Tyr Gly Leu Val Glu Val Lys Ile Lys	
550 555	
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Ala Thr Asn Leu Asn Glu Leu Lys Asn Ala Leu Asp Phe Ile Ser Gln	
20 25 30	

Asn	Arg	Gly	Asn	Gly	Tyr	Phe	Val	Gly	Tyr	Leu	Leu	Tyr	Glu	Ala	Arg		
		35					40					45					
Leu	Ala	Phe	Leu	Asp	Glu	Asn	Phe	Gln	Ser	Gln	Thr	Pro	Phe	Leu	Tyr		
	50					55					60						
Phe	Glu	Gln	Phe	Leu	Glu	Arg	Lys	Lys	Tyr	Ser	Leu	Glu	Pro	Leu	Lys		
65					70					75					80		
Glu	His	Ala	Phe	Tyr	Pro	Lys	Ile	His	Ser	Ser	Leu	Asp	Gln	Lys	Thr		
			85						90					95			
Tyr	Phe	Lys	Gln	Phe	Lys	Ala	Val	Lys	Glu	Arg	Leu	Lys	Asn	Gly	Asp		
		100						105					110				
Thr	Tyr	Gln	Val	Asn	Leu	Thr	Met	Asp	Leu	Phe	Leu	Asp	Thr	Lys	Ala		
	115					120						125					
Lys	Pro	Lys	Arg	Val	Phe	Lys	Glu	Val	Val	His	Asn	Gln	Asn	Thr	Pro		
	130					135					140						
Phe	Lys	Ala	Phe	Ile	Glu	Asn	Glu	Phe	Gly	Ser	Val	Leu	Ser	Phe	Ser		
145					150					155					160		
Pro	Glu	Leu	Phe	Phe	Glu	Leu	Glu	Phe	Leu	Asp	Thr	Ala	Ile	Lys	Ile		
			165					170						175			
Ile	Thr	Lys	Pro	Met	Lys	Gly	Thr	Ile	Ala	Arg	Ser	Lys	Asn	Pro	Leu		
	180						185						190				
Ile	Asp	Glu	Lys	Asn	Arg	Leu	Phe	Leu	Gln	Asn	Asp	Asp	Lys	Asn	Arg		
	195					200					205						
Ser	Glu	Asn	Val	Met	Ile	Val	Asp	Leu	Leu	Arg	Asn	Asp	Leu	Ser	Arg		
	210				215						220						
Leu	Ala	Leu	Lys	Asn	Ser	Val	Lys	Val	Asn	Gln	Leu	Phe	Glu	Ile	Ile		
225				230					235						240		
Ser	Leu	Pro	Ser	Val	Tyr	Gln	Met	Ile	Ser	Glu	Ile	Glu	Ala	Lys	Leu		
		245						250						255			
Pro	Leu	Lys	Thr	Ser	Leu	Phe	Glu	Ile	Phe	Lys	Ala	Leu	Phe	Pro	Cys		
	260						265					270					
Gly	Ser	Val	Thr	Gly	Cys	Pro	Lys	Ile	Lys	Thr	Met	Gln	Ile	Ile	Glu		
	275					280						285					
Ser	Leu	Glu	Lys	Arg	Pro	Arg	Gly	Val	Tyr	Cys	Gly	Ala	Ile	Gly	Met		
	290				295						300						
Val	Glu	Glu	Lys	Lys	Ala	Leu	Phe	Ser	Val	Pro	Ile	Arg	Thr	Leu	Glu		
305				310					315					320			
Lys	Arg	Val	His	Glu	Asn	Phe	Leu	His	Leu	Gly	Val	Gly	Ser	Gly	Val		
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Thr	Tyr	Lys	Ser	Lys	Ala	Pro	Lys	Glu	Tyr	Glu	Glu	Ser	Phe	Leu	Lys		
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Ser	Phe	Phe	Val	Met	Pro	Lys	Ile	Glu	Phe	Glu	Ile	Val	Glu	Thr	Met		
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Lys	Ile	Ile	Lys	Lys	Asp	Gln	Lys	Leu	Glu	Ile	Asn	Asn	Lys	Asn	Ala		
	370				375						380						
His	Lys	Glu	Arg	Leu	Met	Asn	Ser	Thr	Arg	Tyr	Phe	Asn	Phe	Lys	Tyr		
385				390					395					400			
Asp	Glu	Asn	Leu	Leu	Asp	Phe	Glu	Leu	Glu	Lys	Glu	Gly	Val	Leu	Arg		
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Val	Leu	Leu	Asn	Lys	Lys	Gly	Lys	Leu	Ile	Lys	Glu	Tyr	Lys	Thr	Leu		
	420						425						430				
Glu	Pro	Leu	Lys	Ser	Leu	Glu	Ile	Arg	Leu	Ser	Glu	Ala	Pro	Ile	Asp		
	435					440						445					
Lys	Arg	Asn	Asp	Phe	Leu	Tyr	His	Lys	Thr	Thr	Tyr	Ala	Pro	Phe	Tyr		
	450				455						460						
Gln	Lys	Ala	Arg	Ala	Leu	Ile	Lys	Lys	Gly	Val	Met	Phe	Asp	Glu	Ile		

465		470		475		480
Phe Tyr Asn Gln Asp	Leu Glu Leu Thr Glu Gly Ala Arg Ser Asn Leu					
	485		490		495	
Val Leu Glu Ile His Asn Arg Leu Leu Thr Pro Tyr Phe Ser Ala Gly						
	500		505		510	
Ala Leu Asn Gly Thr Gly Val Val Gly Leu Leu Lys Lys Gly Leu Val						
	515		520		525	
Gly His Ala Pro Leu Lys Leu Gln Asp Leu Gln Lys Ala Ser Lys Ile						
	530		535		540	
Tyr Cys Ile Asn Ala Leu Tyr Gly Leu Val Glu Val Lys Ile Lys						
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<220>
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	Met Glu
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Ser Phe Arg Glu Phe Ile Gln Gln Phe Lys Lys Asn Lys Ala Ala Val	
	5 10 15
gtt ggg gct tgg att gtg ctt tta ttg gta att tgc gcg att ttt gcg	152
Val Gly Ala Trp Ile Val Leu Leu Leu Val Ile Cys Ala Ile Phe Ala	
	20 25 30
ccc ctt tta gcc ccg cat gat cct tat gtc caa aac gcg caa gat cgc	200
Pro Leu Leu Ala Pro His Asp Pro Tyr Val Gln Asn Ala Gln Asp Arg	
	35 40 45 50
ctt ttg aag cct ata tgg gag cat gga ggg aat gct aaa tac ctt tta	248
Leu Leu Lys Pro Ile Trp Glu His Gly Gly Asn Ala Lys Tyr Leu Leu	
	55 60 65
ggc acc gat gat ttg ggg cgc gat att ttg agc cgc ttg atc tat ggg	296
Gly Thr Asp Asp Leu Gly Arg Asp Ile Leu Ser Arg Leu Ile Tyr Gly	
	70 75 80
gcc agg att tct tta acc ata ggg att gtt tct atg ggg att gcg gtg	344
Ala Arg Ile Ser Leu Thr Ile Gly Ile Val Ser Met Gly Ile Ala Val	
	85 90 95
ttt ttt ggc acg ata cta ggg cta ata gcg ggg tat ttt ggg ggg aaa	392
Phe Phe Gly Thr Ile Leu Gly Leu Ile Ala Gly Tyr Phe Gly Gly Lys	
	100 105 110

aca gat gca att atc atg cgt atc atg gac atc atg ttc gct ttg ccc	440
Thr Asp Ala Ile Ile Met Arg Ile Met Asp Ile Met Phe Ala Leu Pro	
115 120 125 130	
tct att tta ttg atc gtg att gtg gtc gcg gtg tta ggg cct tca ctc	488
Ser Ile Leu Leu Ile Val Ile Val Val Ala Val Leu Gly Pro Ser Leu	
135 140 145	
act aac gcc atg ctc gct att ggg ttt gtg ggg att cct ggg ttt gca	536
Thr Asn Ala Met Leu Ala Ile Gly Phe Val Gly Ile Pro Gly Phe Ala	
150 155 160	
aga ttg gtg cgc agt tcc gtg cta ggt gaa aaa gaa aaa gaa tac gtg	584
Arg Leu Val Arg Ser Ser Val Leu Gly Glu Lys Glu Lys Glu Tyr Val	
165 170 175	
atc gct tct aaa atc aat ggc tct tcg cat ctt cgt ttg atg tgt aag	632
Ile Ala Ser Lys Ile Asn Gly Ser Ser His Leu Arg Leu Met Cys Lys	
180 185 190	
gtg att ttc cct aat tgc att atc cct tta atc gtt caa acg aca atg	680
Val Ile Phe Pro Asn Cys Ile Ile Pro Leu Ile Val Gln Thr Thr Met	
195 200 205 210	
ggg ttt gct tcc acg gtt tta gaa gcg gct gca ctg agc ttc tta ggt	728
Gly Phe Ala Ser Thr Val Leu Glu Ala Ala Ala Leu Ser Phe Leu Gly	
215 220 225	
ctt ggg gcc caa cct ccc aaa ccc gaa tgg gga gcg atg ttg atg aat	776
Leu Gly Ala Gln Pro Pro Lys Pro Glu Trp Gly Ala Met Leu Met Asn	
230 235 240	
tcc atg caa tac atc gct acc gct cct tgg atg ctt gtt ttc cct ggg	824
Ser Met Gln Tyr Ile Ala Thr Ala Pro Trp Met Leu Val Phe Pro Gly	
245 250 255	
gtg atg att ttt tta acg gtc atg agt ttt aat ctg gta ggc gat ggc	872
Val Met Ile Phe Leu Thr Val Met Ser Phe Asn Leu Val Gly Asp Gly	
260 265 270	
atc atg gac gct tta gat cct aaa cgc acc tct taaaaggagc ttgcatgatt	925
Ile Met Asp Ala Leu Asp Pro Lys Arg Thr Ser	
275 280 285	
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Gly	Ser	Ile	Asn	Leu	Met	Thr	Asn	Ile	His	Glu	Val	Arg	Glu	Val	Thr		
		10					15					20					
aac	tat	caa	acc	ggt	tac	acc	aat	att	ata	act	agc	ggt	aat	agc	ggt	211	
Asn	Tyr	Gln	Thr	Gly	Tyr	Thr	Asn	Ile	Ile	Thr	Ser	Val	Asn	Ser	Val		
	25					30					35						
aaa	aag	ctc	acc	aac	atg	gga	tct	aat	ggg	att	gga	tta	gtc	atg	ggt	259	
Lys	Lys	Leu	Thr	Asn	Met	Gly	Ser	Asn	Gly	Ile	Gly	Leu	Val	Met	Gly		
	40				45				50					55			
tat	aac	cac	ttt	ttc	cat	ccg	gat	aaa	atc	ttg	ggc	ttg	cgc	tat	ttc	307	
Tyr	Asn	His	Phe	Phe	His	Pro	Asp	Lys	Ile	Leu	Gly	Leu	Arg	Tyr	Phe		
			60					65					70				
gct	ttt	tta	gat	tgg	caa	ggc	tat	ggc	atg	aga	tac	cct	aaa	ggc	tat	355	
Ala	Phe	Leu	Asp	Trp	Gln	Gly	Tyr	Gly	Met	Arg	Tyr	Pro	Lys	Gly	Tyr		
			75				80					85					
tat	ggc	ggc	aat	aac	atg	atc	act	tat	ggc	gtg	ggc	gtg	gat	gca	gtg	403	
Tyr	Gly	Gly	Asn	Asn	Met	Ile	Thr	Tyr	Gly	Val	Gly	Val	Asp	Ala	Val		
		90				95					100						
tgg	aat	ttc	ttt	caa	ggg	agt	ttc	tat	caa	gat	gac	att	agc	gtg	gat	451	
Trp	Asn	Phe	Phe	Gln	Gly	Ser	Phe	Tyr	Gln	Asp	Asp	Ile	Ser	Val	Asp		
	105					110					115						
att	ggc	ggt	ttt	ggg	ggg	att	gcg	att	gcg	ggg	aat	agc	tgg	tat	att	499	
Ile	Gly	Val	Phe	Gly	Gly	Ile	Ala	Ile	Ala	Gly	Asn	Ser	Trp	Tyr	Ile		
	120				125				130					135			
ggc	agt	aaa	ggg	cag	gaa	ttg	tta	ggt	atc	act	aac	agc	agc	gcg	ggt	547	
Gly	Ser	Lys	Gly	Gln	Glu	Leu	Leu	Gly	Ile	Thr	Asn	Ser	Ser	Ala	Val		
			140					145						150			
gat	aac	acc	tct	ttt	caa	ttc	ctc	ttt	aac	ttt	ggc	ctc	aag	gct	tta	595	
Asp	Asn	Thr	Ser	Phe	Gln	Phe	Leu	Phe	Asn	Phe	Gly	Leu	Lys	Ala	Leu		
		155					160					165					
ttt	gta	gat	gag	cat	gaa	ttt	gaa	atc	ggt	ttt	aaa	ttc	ccc	acc	att	643	
Phe	Val	Asp	Glu	His	Glu	Phe	Glu	Ile	Gly	Phe	Lys	Phe	Pro	Thr	Ile		
		170				175					180						
aat	aac	aaa	tac	tac	acc	act	gac	gcg	ctc	aag	ggt	caa	atg	cgt	agg	691	
Asn	Asn	Lys	Tyr	Tyr	Thr	Thr	Asp	Ala	Leu	Lys	Val	Gln	Met	Arg	Arg		
	185				190					195							
gtc	ttt	gcc	ttt	tat	gtg	ggg	tat	aat	tac	cac	ttc	taaagggtt				737	
Val	Phe	Ala	Phe	Tyr	Val	Gly	Tyr	Asn	Tyr	His	Phe						
	200				205			210									
ttaaaaccca	acgcaactcc	ctaacatctt	ttggtaatag	ctcttggtt	tgag											791	

<210> 308
<211> 211

<212> PRT
 <213> Helicobacter pylori

<400> 308

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Ile Thr Ser Val Asn Ser Val Lys Lys Leu Thr Asn Met Gly Ser Asn
           35           40           45
Gly Ile Gly Leu Val Met Gly Tyr Asn His Phe Phe His Pro Asp Lys
           50           55           60
Ile Leu Gly Leu Arg Tyr Phe Ala Phe Leu Asp Trp Gln Gly Tyr Gly
65           70           75           80
Met Arg Tyr Pro Lys Gly Tyr Tyr Gly Gly Asn Asn Met Ile Thr Tyr
           85           90           95
Gly Val Gly Val Asp Ala Val Trp Asn Phe Phe Gln Gly Ser Phe Tyr
           100          105          110
Gln Asp Asp Ile Ser Val Asp Ile Gly Val Phe Gly Gly Ile Ala Ile
           115          120          125
Ala Gly Asn Ser Trp Tyr Ile Gly Ser Lys Gly Gln Glu Leu Leu Gly
           130          135          140
Ile Thr Asn Ser Ser Ala Val Asp Asn Thr Ser Phe Gln Phe Leu Phe
145          150          155          160
Asn Phe Gly Leu Lys Ala Leu Phe Val Asp Glu His Glu Phe Glu Ile
           165          170          175
Gly Phe Lys Phe Pro Thr Ile Asn Asn Lys Tyr Tyr Thr Thr Asp Ala
           180          185          190
Leu Lys Val Gln Met Arg Arg Val Phe Ala Phe Tyr Val Gly Tyr Asn
           195          200          205
Tyr His Phe
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 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (51)...(464)

<400> 309

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ggg ggt gga acg gta aaa aaa gac ttg aag aaa gcc att caa tac tat      104
Gly Gly Gly Thr Val Lys Lys Asp Leu Lys Lys Ala Ile Gln Tyr Tyr
           5           10           15

gtt aaa gcg tgt gaa ttg aat gaa atg ttt ggg tgt ctg tca tta gtt      152
Val Lys Ala Cys Glu Leu Asn Glu Met Phe Gly Cys Leu Ser Leu Val
           20           25           30
  
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tcg aac tct caa ata aac aaa caa aaa ctc ttt caa tat ctc tct aaa	200
Ser Asn Ser Gln Ile Asn Lys Gln Lys Leu Phe Gln Tyr Leu Ser Lys	
35 40 45 50	
gct tgt gaa tta aat agt ggt aat gga tgt agg ttt tta ggg gat ttt	248
Ala Cys Glu Leu Asn Ser Gly Asn Gly Cys Arg Phe Leu Gly Asp Phe	
55 60 65	
tat gag aat gga aaa tat gta aaa aag gat tta aga aaa gct gct caa	296
Tyr Glu Asn Gly Lys Tyr Val Lys Lys Asp Leu Arg Lys Ala Ala Gln	
70 75 80	
tac tac tct aaa gct tgt gga tta aat gat caa gat ggg tgt tta ata	344
Tyr Tyr Ser Lys Ala Cys Gly Leu Asn Asp Gln Asp Gly Cys Leu Ile	
85 90 95	
cta gga tat aag caa tat gct ggc aag ggc gta gtc aaa aat gaa aaa	392
Leu Gly Tyr Lys Gln Tyr Ala Gly Lys Gly Val Val Lys Asn Glu Lys	
100 105 110	
caa gcg gtg aaa acc ttt gaa aag gct tgt agg tta gga tct gaa gac	440
Gln Ala Val Lys Thr Phe Glu Lys Ala Cys Arg Leu Gly Ser Glu Asp	
115 120 125 130	
gca tgt ggt att tta aac aac tac tagatttgaa ataaatgctg ttttttagct	494
Ala Cys Gly Ile Leu Asn Asn Tyr	
135	
ggctttcatg tttttgtaac ccc	517
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<213> Helicobacter pylori	
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Tyr Tyr Val Lys Ala Cys Glu Leu Asn Glu Met Phe Gly Cys Leu Ser	
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Leu Val Ser Asn Ser Gln Ile Asn Lys Gln Lys Leu Phe Gln Tyr Leu	
35 40 45	
Ser Lys Ala Cys Glu Leu Asn Ser Gly Asn Gly Cys Arg Phe Leu Gly	
50 55 60	
Asp Phe Tyr Glu Asn Gly Lys Tyr Val Lys Lys Asp Leu Arg Lys Ala	
65 70 75 80	
Ala Gln Tyr Tyr Ser Lys Ala Cys Gly Leu Asn Asp Gln Asp Gly Cys	
85 90 95	
Leu Ile Leu Gly Tyr Lys Gln Tyr Ala Gly Lys Gly Val Val Lys Asn	
100 105 110	
Glu Lys Gln Ala Val Lys Thr Phe Glu Lys Ala Cys Arg Leu Gly Ser	
115 120 125	
Glu Asp Ala Cys Gly Ile Leu Asn Asn Tyr	
130 135	

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<210> 311
<211> 451
<212> DNA
<213> Helicobacter pylori
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			20					25					30		
Gly	Lys	Arg	Ile	Thr	Lys	Thr	Tyr	Gly	Leu	Leu	Thr	Asp	Ile	Leu	Ser
		35					40					45			
Tyr	Gly	Trp	Tyr	Lys	Asn	Leu	Asp	Ala	Met	Arg	Arg	Met	Val	Ile	Leu
	50					55					60				
Asp	Leu	Ser	Tyr	Asn	Leu	Gly	Leu	Asn	Gly	Leu	Lys	Phe	Lys	Gln	
65					70					75				80	
Phe	Ile	Lys	Ala	Ile	Glu	Asp	Lys	Asn	Tyr	Ala	Leu	Ala	Val	Glu	Arg
				85					90					95	
Leu	Gln	Lys	Ser	Pro	Tyr	Phe	Asn	Gln	Val	Lys	Lys	Glu	Arg	Gln	Gly
			100					105						110	
Ile	Trp	Lys	Phe												
			115												

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 <211> 399
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (50)...(346)

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Ser	Phe	Phe	Arg	Asn	Thr	Pro	His	Phe	Leu	Ile	Ser	Arg	Ile	Phe	Ile	
	5					10					15					
cac	cag	cat	gag	aat	aaa	aat	cag	aat	att	gac	tat	gag	caa	cca	aac	154
His	Gln	His	Glu	Asn	Lys	Asn	Gln	Asn	Ile	Asp	Tyr	Glu	Gln	Pro	Asn	
	20				25					30				35		
gat	aga	agc	aaa	ttc	cac	gct	cac	cct	ttc	aag	agc	ggt	tta	aca	acc	202
Asp	Arg	Ser	Lys	Phe	His	Ala	His	Pro	Phe	Lys	Ser	Val	Leu	Thr	Thr	
				40					45				50			
caa	acg	cta	cca	ctt	ggt	ttt	tta	gag	aga	gaa	aga	gag	aga	aag	caa	250
Gln	Thr	Leu	Pro	Leu	Gly	Phe	Leu	Glu	Arg	Glu	Arg	Glu	Arg	Lys	Gln	
			55				60					65				
aat	ttt	aag	att	gat	tct	caa	atc	tat	tcc	ttt	gca	aaa	ggt	aag	att	298
Asn	Phe	Lys	Ile	Asp	Ser	Gln	Ile	Tyr	Ser	Phe	Ala	Lys	Val	Lys	Ile	
		70				75					80					
ggg	tgt	ttt	aac	atg	att	ttt	ggc	ctg	ctc	gca	tca	agc	cct	tat	ttt	346
Gly	Cys	Phe	Asn	Met	Ile	Phe	Gly	Leu	Leu	Ala	Ser	Ser	Pro	Tyr	Phe	
	85					90					95					

taacatttcc gctcccttgc ttttttaaag cctccctaaa ttactacacc act

399

<210> 314

<211> 99

<212> PRT

<213> Helicobacter pylori

<400> 314

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Asn Pro Gln Ser Phe Phe Arg Asn Thr Pro His Phe Leu Ile Ser Arg
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Ile Phe Ile His Gln His Glu Asn Lys Asn Gln Asn Ile Asp Tyr Glu
 20          25          30
Gln Pro Asn Asp Arg Ser Lys Phe His Ala His Pro Phe Lys Ser Val
 35          40          45
Leu Thr Thr Gln Thr Leu Pro Leu Gly Phe Leu Glu Arg Glu Arg Glu
 50          55          60
Arg Lys Gln Asn Phe Lys Ile Asp Ser Gln Ile Tyr Ser Phe Ala Lys
 65          70          75          80
Val Lys Ile Gly Cys Phe Asn Met Ile Phe Gly Leu Leu Ala Ser Ser
      85          90          95
Pro Tyr Phe

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<210> 315

<211> 522

<212> DNA

<213> Helicobacter pylori

<220>

<221> CDS

<222> (51)...(470)

<400> 315

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tat ttt ttt aaa atc att ctg ggc aca agc gtg atc gtg ggg gtg ttg      104
Tyr Phe Phe Lys Ile Ile Leu Gly Thr Ser Val Ile Val Gly Val Leu
      5          10          15

ttg ggc ttg tgg cgt ttg act tac gat aag ttc tat ttc tcg ttg gtc      152
Leu Gly Leu Trp Arg Leu Thr Tyr Asp Lys Phe Tyr Phe Ser Leu Val
      20          25          30

ttt gtg ttg ctg ata cta ggg att gtc gct tgt agc tat att tct tta      200
Phe Val Leu Leu Ile Leu Gly Ile Val Ala Cys Ser Tyr Ile Ser Leu
      35          40          45          50

aaa atg cat cag agg aaa tgc ttc gcc aag tgt ttc gtg aat agt gaa      248
Lys Met His Gln Arg Lys Cys Phe Ala Lys Cys Phe Val Asn Ser Glu
      55          60          65

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tct ttt tta tcc aag atg tta cac tcc cca ata atg gta att tgc ttt 296
 Ser Phe Leu Ser Lys Met Leu His Ser Pro Ile Met Val Ile Cys Phe
 70 75 80

tat ttt att ttt tca att ttc aca tcc ata tcc atc gtc tat agc gtg 344
 Tyr Phe Ile Phe Ser Ile Phe Thr Ser Ile Ser Ile Val Tyr Ser Val
 85 90 95

ctg gac tat gat cag atg atg tgg ggg ttt gtt ttt tgc act atc gtt 392
 Leu Asp Tyr Asp Gln Met Met Trp Gly Phe Val Phe Cys Thr Ile Val
 100 105 110

gtt tgc gct gtg gtg ttt ggc acg ctt gaa aaa aat gct caa gag tac 440
 Val Cys Ala Val Val Phe Gly Thr Leu Glu Lys Asn Ala Gln Glu Tyr
 115 120 125 130

cat caa aga aga tta ttt gat gct gat gtc tagagaagtg agtgcttttg 490
 His Gln Arg Arg Leu Phe Asp Ala Asp Val
 135 140

tggggactct tttcttcatt ggcttgagtt gc 522

<210> 316

<211> 140

<212> PRT

<213> Helicobacter pylori

<400> 316

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 Val Leu Leu Gly Leu Trp Arg Leu Thr Tyr Asp Lys Phe Tyr Phe Ser
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 Leu Val Phe Val Leu Leu Ile Leu Gly Ile Val Ala Cys Ser Tyr Ile
 35 40 45
 Ser Leu Lys Met His Gln Arg Lys Cys Phe Ala Lys Cys Phe Val Asn
 50 55 60
 Ser Glu Ser Phe Leu Ser Lys Met Leu His Ser Pro Ile Met Val Ile
 65 70 75 80
 Cys Phe Tyr Phe Ile Phe Ser Ile Phe Thr Ser Ile Ser Ile Val Tyr
 85 90 95
 Ser Val Leu Asp Tyr Asp Gln Met Met Trp Gly Phe Val Phe Cys Thr
 100 105 110
 Ile Val Val Cys Ala Val Val Phe Gly Thr Leu Glu Lys Asn Ala Gln
 115 120 125
 Glu Tyr His Gln Arg Arg Leu Phe Asp Ala Asp Val
 130 135 140

<210> 317

<211> 976

<212> DNA

<213> Helicobacter pylori

<220>

<221> CDS

<222> (51)...(923)

<221> misc_feature

<222> 116

<223> n = A,T,C or G

<400> 317

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cgt agg cgt aac cgc ggc gat gct agc ggc aca gga tta gac aaa ctc      104
Arg Arg Arg Asn Arg Gly Asp Ala Ser Gly Thr Gly Leu Asp Lys Leu
      5                      10                      15

att gac gct tan cct ttg cgc ttt ttt gat gtc gct atc gct gag caa      152
Ile Asp Ala Xaa Pro Leu Arg Phe Phe Asp Val Ala Ile Ala Glu Gln
      20                      25                      30

cac gct tta act tct agc agc gct atg gct aaa gag ggg ttt aaa cct      200
His Ala Leu Thr Ser Ser Ser Ala Met Ala Lys Glu Gly Phe Lys Pro
      35                      40                      45                      50

ttt gtg agc atc tat tct act ttt ttg cag agg gct tat gat tct att      248
Phe Val Ser Ile Tyr Ser Thr Phe Leu Gln Arg Ala Tyr Asp Ser Ile
                        55                      60                      65

gtg cat gac gct tgt att tct agc ttg ccg att aaa tta gcc att gac      296
Val His Asp Ala Cys Ile Ser Ser Leu Pro Ile Lys Leu Ala Ile Asp
                        70                      75                      80

agg gct ggg att gtg ggc gaa gat ggc gag acg cac caa ggg ctt tta      344
Arg Ala Gly Ile Val Gly Glu Asp Gly Glu Thr His Gln Gly Leu Leu
                        85                      90                      95

gac gtg tcg tat ttg cgc tct atc cct aac atg gtc att ttt gcc cca      392
Asp Val Ser Tyr Leu Arg Ser Ile Pro Asn Met Val Ile Phe Ala Pro
      100                      105                      110

cga gac aat gag act tta aaa aac gcc gtg cgt ttt gcc aat gaa cac      440
Arg Asp Asn Glu Thr Leu Lys Asn Ala Val Arg Phe Ala Asn Glu His
      115                      120                      125                      130

gat tca agc cct tgc gcg ttc cga tac cct agg ggg tcg ttt gcg tta      488
Asp Ser Ser Pro Cys Ala Phe Arg Tyr Pro Arg Gly Ser Phe Ala Leu
                        135                      140                      145

aaa gag ggg gtt ttt gag cct agc ggt ttt gtt tta ggc caa agc gaa      536
Lys Glu Gly Val Phe Glu Pro Ser Gly Phe Val Leu Gly Gln Ser Glu
                        150                      155                      160

ttg ttg aaa aaa gag ggc gaa att tta ctc ata ggc tat ggt aat ggc      584
Leu Leu Lys Lys Glu Gly Glu Ile Leu Leu Ile Gly Tyr Gly Asn Gly
      165                      170                      175
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gtg ggg cgg gcg cat tta gtc caa ctg gct tta aaa gaa aaa aac ata 632
Val Gly Arg Ala His Leu Val Gln Leu Ala Leu Lys Glu Lys Asn Ile
180 185 190

gaa tgc gct ctc ttg gat ctc agg ttt tta aag cct tta gat cca aat 680
Glu Cys Ala Leu Leu Asp Leu Arg Phe Leu Lys Pro Leu Asp Pro Asn
195 200 205 210

tta agc gcg atc gtt gcc cct tat caa aag ctc tat gtt ttt agc gat 728
Leu Ser Ala Ile Val Ala Pro Tyr Gln Lys Leu Tyr Val Phe Ser Asp
215 220 225

aat tac aag ctt gga ggg gtg gct agc gcg att tta gag ttt ttg agc 776
Asn Tyr Lys Leu Gly Gly Val Ala Ser Ala Ile Leu Glu Phe Leu Ser
230 235 240

gaa caa aat att tta aag cct gtt aaa agc ttt gaa atc att gat gaa 824
Glu Gln Asn Ile Leu Lys Pro Val Lys Ser Phe Glu Ile Ile Asp Glu
245 250 255

ttt atc atg cat ggg aac acc gct tta gtg gaa aaa tcc tta gga tta 872
Phe Ile Met His Gly Asn Thr Ala Leu Val Glu Lys Ser Leu Gly Leu
260 265 270

gac aca gag agt ttg act gac gct att tta aaa gat tta gga caa gag 920
Asp Thr Glu Ser Leu Thr Asp Ala Ile Leu Lys Asp Leu Gly Gln Glu
275 280 285 290

aga tgaaaacaaa agcgccaatg aaaaatatcc gcaatttttc cattatcgct 973
Arg

cac 976

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<211> 291

<212> PRT

<213> Helicobacter pylori

<220>

<221> VARIANT

<222> 22

<223> Xaa = Any Amino Acid

<400> 318

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Glu Gln His Ala Leu Thr Ser Ser Ser Ala Met Ala Lys Glu Gly Phe
35 40 45
Lys Pro Phe Val Ser Ile Tyr Ser Thr Phe Leu Gln Arg Ala Tyr Asp
50 55 60
Ser Ile Val His Asp Ala Cys Ile Ser Ser Leu Pro Ile Lys Leu Ala
65 70 75 80

Ile	Asp	Arg	Ala	Gly	Ile	Val	Gly	Glu	Asp	Gly	Glu	Thr	His	Gln	Gly	
				85					90					95		
Leu	Leu	Asp	Val	Ser	Tyr	Leu	Arg	Ser	Ile	Pro	Asn	Met	Val	Ile	Phe	
			100					105					110			
Ala	Pro	Arg	Asp	Asn	Glu	Thr	Leu	Lys	Asn	Ala	Val	Arg	Phe	Ala	Asn	
			115				120					125				
Glu	His	Asp	Ser	Ser	Pro	Cys	Ala	Phe	Arg	Tyr	Pro	Arg	Gly	Ser	Phe	
	130					135					140					
Ala	Leu	Lys	Glu	Gly	Val	Phe	Glu	Pro	Ser	Gly	Phe	Val	Leu	Gly	Gln	
145					150					155					160	
Ser	Glu	Leu	Leu	Lys	Glu	Gly	Glu	Ile	Leu	Leu	Ile	Gly	Tyr	Gly		
			165					170					175			
Asn	Gly	Val	Gly	Arg	Ala	His	Leu	Val	Gln	Leu	Ala	Leu	Lys	Glu	Lys	
			180					185					190			
Asn	Ile	Glu	Cys	Ala	Leu	Leu	Asp	Leu	Arg	Phe	Leu	Lys	Pro	Leu	Asp	
	195						200					205				
Pro	Asn	Leu	Ser	Ala	Ile	Val	Ala	Pro	Tyr	Gln	Lys	Leu	Tyr	Val	Phe	
	210					215					220					
Ser	Asp	Asn	Tyr	Lys	Leu	Gly	Gly	Val	Ala	Ser	Ala	Ile	Leu	Glu	Phe	
225				230						235					240	
Leu	Ser	Glu	Gln	Asn	Ile	Leu	Lys	Pro	Val	Lys	Ser	Phe	Glu	Ile	Ile	
			245					250					255			
Asp	Glu	Phe	Ile	Met	His	Gly	Asn	Thr	Ala	Leu	Val	Glu	Lys	Ser	Leu	
		260					265					270				
Gly	Leu	Asp	Thr	Glu	Ser	Leu	Thr	Asp	Ala	Ile	Leu	Lys	Asp	Leu	Gly	
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Gln	Glu	Arg														
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<211> 1135

<212> DNA

<213> Helicobacter pylori

<220>

<221> CDS

<222> (51)...(1082)

<400> 319

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Leu Leu Phe Thr Gly Ala Cys Gly Tyr Ile Gly Ser His Thr Ala Arg	
5 10 15	

gcg ttt tta gaa aaa acc aaa gaa aat atc att att gta gat gac tta	152
Ala Phe Leu Glu Lys Thr Lys Glu Asn Ile Ile Ile Val Asp Asp Leu	
20 25 30	

agc acc ggt ttt tta gag cac ctc aaa gcg tta gag cat tat tac cct	200
Ser Thr Gly Phe Leu Glu His Leu Lys Ala Leu Glu His Tyr Tyr Pro	
35 40 45 50	

aat agg gtt gtg ttt att caa gcg aat ttg aat gaa acg cac aaa tta	248
Asn Arg Val Val Phe Ile Gln Ala Asn Leu Asn Glu Thr His Lys Leu	
55 60 65	
gac gcc ttt ttg aat aag cag cag cta aaa gat ccc att gaa gcc atc	296
Asp Ala Phe Leu Asn Lys Gln Gln Leu Lys Asp Pro Ile Glu Ala Ile	
70 75 80	
ttg cac ttt ggg gct aaa atc tca gta gaa gaa tcc acg cac ttg cct	344
Leu His Phe Gly Ala Lys Ile Ser Val Glu Glu Ser Thr His Leu Pro	
85 90 95	
tta gaa tac tac acc aac aac acg ctc aac act tta gag ctt gtc aaa	392
Leu Glu Tyr Tyr Thr Asn Asn Thr Leu Asn Thr Leu Glu Leu Val Lys	
100 105 110	
ctt tgc tta aaa cat gca atc aag cgt ttt att ttt tct tct acg gcc	440
Leu Cys Leu Lys His Ala Ile Lys Arg Phe Ile Phe Ser Ser Thr Ala	
115 120 125 130	
gtg gtt tat ggc gaa tct agt tca agt ttg aat gaa gaa agc ccc tta	488
Val Val Tyr Gly Glu Ser Ser Ser Ser Leu Asn Glu Glu Ser Pro Leu	
135 140 145	
aac ccc att aat cct tat gga gcg tct aaa atg atg agc gaa aga atc	536
Asn Pro Ile Asn Pro Tyr Gly Ala Ser Lys Met Met Ser Glu Arg Ile	
150 155 160	
ttg tta gac act tct aaa ata gcg gat ttt aaa tgc gtt att ttg cgc	584
Leu Leu Asp Thr Ser Lys Ile Ala Asp Phe Lys Cys Val Ile Leu Arg	
165 170 175	
tat ttc aat gtg gct ggg gca tgc atg cac aat gat tat acc acc cct	632
Tyr Phe Asn Val Ala Gly Ala Cys Met His Asn Asp Tyr Thr Thr Pro	
180 185 190	
tac acg cta ggg caa cgc acg ctc aac gcc acg cat ttg atc aaa atc	680
Tyr Thr Leu Gly Gln Arg Thr Leu Asn Ala Thr His Leu Ile Lys Ile	
195 200 205 210	
gca tgc gaa tgc gcg gtg ggg aaa agg aaa aaa atg ggg att ttt ggc	728
Ala Cys Glu Cys Ala Val Gly Lys Arg Lys Lys Met Gly Ile Phe Gly	
215 220 225	
act aac tac ccc aca aga gat ggc act tgc att agg gat tat atc cat	776
Thr Asn Tyr Pro Thr Arg Asp Gly Thr Cys Ile Arg Asp Tyr Ile His	
230 235 240	
gta gat gat ttg gct aac gca cat tta gcg agc tat caa acc ctt tta	824
Val Asp Asp Leu Ala Asn Ala His Leu Ala Ser Tyr Gln Thr Leu Leu	
245 250 255	
gaa aaa aat aag agc gag atc tat aat gtc ggc tac aat caa ggc cat	872
Glu Lys Asn Lys Ser Glu Ile Tyr Asn Val Gly Tyr Asn Gln Gly His	

260	265	270	
agc gtg aaa gaa gtg ata gaa aag gtc aaa gaa atc tca aac aac gat			920
Ser Val Lys Glu Val Ile Glu Lys Val Lys Glu Ile Ser Asn Asn Asp			
275	280	285	290
ttt tta gtg gaa att tta gac aaa cga cag ggc gat cca gca agc ctt			968
Phe Leu Val Glu Ile Leu Asp Lys Arg Gln Gly Asp Pro Ala Ser Leu			
	295	300	305
att gcc aat aac gct aaa atc tta caa aac acc tct ttc aaa ccc ctt			1016
Ile Ala Asn Asn Ala Lys Ile Leu Gln Asn Thr Ser Phe Lys Pro Leu			
	310	315	320
tat aac aac cta gac acc att atc aaa agc gct cta gat tgg gaa gaa			1064
Tyr Asn Asn Leu Asp Thr Ile Ile Lys Ser Ala Leu Asp Trp Glu Glu			
	325	330	335
cac ctt ttg agg ttt caa taatacaccc tgtgcaaata caagccatta			1112
His Leu Leu Arg Phe Gln			
340			
gccattatgg gcgttcttat agt			1135
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Ala Arg Ala Phe Leu Glu Lys Thr Lys Glu Asn Ile Ile Ile Val Asp			
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Asp Leu Ser Thr Gly Phe Leu Glu His Leu Lys Ala Leu Glu His Tyr			
	35	40	45
Tyr Pro Asn Arg Val Val Phe Ile Gln Ala Asn Leu Asn Glu Thr His			
	50	55	60
Lys Leu Asp Ala Phe Leu Asn Lys Gln Gln Leu Lys Asp Pro Ile Glu			
65	70	75	80
Ala Ile Leu His Phe Gly Ala Lys Ile Ser Val Glu Glu Ser Thr His			
	85	90	95
Leu Pro Leu Glu Tyr Tyr Thr Asn Asn Thr Leu Asn Thr Leu Glu Leu			
	100	105	110
Val Lys Leu Cys Leu Lys His Ala Ile Lys Arg Phe Ile Phe Ser Ser			
	115	120	125
Thr Ala Val Val Tyr Gly Glu Ser Ser Ser Ser Leu Asn Glu Glu Ser			
	130	135	140
Pro Leu Asn Pro Ile Asn Pro Tyr Gly Ala Ser Lys Met Met Ser Glu			
145	150	155	160
Arg Ile Leu Leu Asp Thr Ser Lys Ile Ala Asp Phe Lys Cys Val Ile			
	165	170	175
Leu Arg Tyr Phe Asn Val Ala Gly Ala Cys Met His Asn Asp Tyr Thr			
	180	185	190
Thr Pro Tyr Thr Leu Gly Gln Arg Thr Leu Asn Ala Thr His Leu Ile			

ttt atg gac agc ttg caa gcg aat aat tta att gac aat atc aat ccc	402
Phe Met Asp Ser Leu Gln Ala Asn Asn Leu Ile Asp Asn Ile Asn Pro	
90 95 100	
ttc atc acc agc ccc gaa atc aat ttg tgt ttg gtg cgt caa gct tat	450
Phe Ile Thr Ser Pro Glu Ile Asn Leu Cys Leu Val Arg Gln Ala Tyr	
105 110 115	
gaa gaa gcc cta cac agc cat gcg tat gcg gtg atg gta gaa agc ata	498
Glu Glu Ala Leu His Ser His Ala Tyr Ala Val Met Val Glu Ser Ile	
120 125 130	
agt gcg aat act gaa gag att tat gac atg tgg cgt aac gat atg caa	546
Ser Ala Asn Thr Glu Glu Ile Tyr Asp Met Trp Arg Asn Asp Met Gln	
135 140 145 150	
tta aaa agc aag aac gac tat atc gcg caa gtg tat atg gaa tta gcc	594
Leu Lys Ser Lys Asn Asp Tyr Ile Ala Gln Val Tyr Met Glu Leu Ala	
155 160 165	
aaa aac ccc aca gaa gaa aac att ctc aaa gcg ctt ttt gct aac cag	642
Lys Asn Pro Thr Glu Glu Asn Ile Leu Lys Ala Leu Phe Ala Asn Gln	
170 175 180	
att tta gag ggg att tat ttt tat agc ggg ttt agc tat ttt tac act	690
Ile Leu Glu Gly Ile Tyr Phe Tyr Ser Gly Phe Ser Tyr Phe Tyr Thr	
185 190 195	
ttg gct agg agc ggt aaa atg cta gga tgc gca caa atg att cgt ttt	738
Leu Ala Arg Ser Gly Lys Met Leu Gly Ser Ala Gln Met Ile Arg Phe	
200 205 210	
atc caa aga gat gag gta acg cat ttg att ttg ttc caa aac atg atc	786
Ile Gln Arg Asp Glu Val Thr His Leu Ile Leu Phe Gln Asn Met Ile	
215 220 225 230	
aac gct tta agg aat gaa aga gcg gat ctc ttc acg ccg caa ttg att	834
Asn Ala Leu Arg Asn Glu Arg Ala Asp Leu Phe Thr Pro Gln Leu Ile	
235 240 245	
aat gaa gtc ata gga atg ttt aaa aaa gcg gta gaa att gaa gct ttg	882
Asn Glu Val Ile Gly Met Phe Lys Lys Ala Val Glu Ile Glu Ala Leu	
250 255 260	
tgg ggg gat tat atc acg caa ggc aag att tta ggg ctc act tca agc	930
Trp Gly Asp Tyr Ile Thr Gln Gly Lys Ile Leu Gly Leu Thr Ser Ser	
265 270 275	
ttg att gag caa tac atc cag ttt tta gcg gat agc cgt ttg agt aag	978
Leu Ile Glu Gln Tyr Ile Gln Phe Leu Ala Asp Ser Arg Leu Ser Lys	
280 285 290	
gtg ggc atc gct aaa gtt tat ggc gtc caa cac ccc att aaa tgg gta	1026
Val Gly Ile Ala Lys Val Tyr Gly Val Gln His Pro Ile Lys Trp Val	

295	300	305	310												
gag agc ttt tca agt ttc aat gag cag cgc tct aat ttc ttt gag gct				1074											
Glu Ser Phe Ser Ser Phe Asn Glu Gln Arg Ser Asn Phe Phe Glu Ala															
	315	320	325												
agg gtg agc aat tac gct aaa ggg agc gtg agt ttt gat gat ttt				1119											
Arg Val Ser Asn Tyr Ala Lys Gly Ser Val Ser Phe Asp Asp Phe															
	330	335	340												
taaggggctt gtttgaatag tattaaaaac catttaatgt gtgaagaaat c				1170											
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Val	Asn	Glu	Arg	Lys	Ile	Phe	Gly	Gly	Asn	Pro	Thr	Ser	Met	Phe	Asp
			20					25					30		
Leu	Asn	Lys	Ile	Lys	Tyr	Gln	Trp	Ala	Asp	His	Leu	Trp	Lys	Thr	Met
		35				40						45			
Leu	Ala	Asn	Thr	Trp	Phe	Ala	Glu	Glu	Val	Ser	Met	Asn	Asp	Asp	Lys
	50				55					60					
Arg	Asp	Tyr	Leu	Lys	Leu	Ser	Ala	Glu	Glu	Lys	Ile	Gly	Tyr	Asp	Arg
65				70						75				80	
Ala	Leu	Ala	Gln	Leu	Ile	Phe	Met	Asp	Ser	Leu	Gln	Ala	Asn	Asn	Leu
			85					90					95		
Ile	Asp	Asn	Ile	Asn	Pro	Phe	Ile	Thr	Ser	Pro	Glu	Ile	Asn	Leu	Cys
		100						105					110		
Leu	Val	Arg	Gln	Ala	Tyr	Glu	Glu	Ala	Leu	His	Ser	His	Ala	Tyr	Ala
	115						120					125			
Val	Met	Val	Glu	Ser	Ile	Ser	Ala	Asn	Thr	Glu	Glu	Ile	Tyr	Asp	Met
	130				135						140				
Trp	Arg	Asn	Asp	Met	Gln	Leu	Lys	Ser	Lys	Asn	Asp	Tyr	Ile	Ala	Gln
145				150					155					160	
Val	Tyr	Met	Glu	Leu	Ala	Lys	Asn	Pro	Thr	Glu	Glu	Asn	Ile	Leu	Lys
			165					170					175		
Ala	Leu	Phe	Ala	Asn	Gln	Ile	Leu	Glu	Gly	Ile	Tyr	Phe	Tyr	Ser	Gly
		180					185					190			
Phe	Ser	Tyr	Phe	Tyr	Thr	Leu	Ala	Arg	Ser	Gly	Lys	Met	Leu	Gly	Ser
	195					200					205				
Ala	Gln	Met	Ile	Arg	Phe	Ile	Gln	Arg	Asp	Glu	Val	Thr	His	Leu	Ile
	210				215					220					
Leu	Phe	Gln	Asn	Met	Ile	Asn	Ala	Leu	Arg	Asn	Glu	Arg	Ala	Asp	Leu
225			230						235					240	
Phe	Thr	Pro	Gln	Leu	Ile	Asn	Glu	Val	Ile	Gly	Met	Phe	Lys	Lys	Ala
			245					250					255		
Val	Glu	Ile	Glu	Ala	Leu	Trp	Gly	Asp	Tyr	Ile	Thr	Gln	Gly	Lys	Ile
	260						265					270			
Leu	Gly	Leu	Thr	Ser	Ser	Leu	Ile	Glu	Gln	Tyr	Ile	Gln	Phe	Leu	Ala
	275					280						285			
Asp	Ser	Arg	Leu	Ser	Lys	Val	Gly	Ile	Ala	Lys	Val	Tyr	Gly	Val	Gln

290	295	300
His Pro Ile Lys Trp Val Glu Ser Phe Ser Ser Phe Asn Glu Gln Arg		
305	310	315
Ser Asn Phe Phe Glu Ala Arg Val Ser Asn Tyr Ala Lys Gly Ser Val		
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Ser Phe Asp Asp Phe		335
	340	

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<220>
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 tttttgttgg attctaac atg aaa gat ttt tat ttc atg gag atg aac act 171
 Met Lys Asp Phe Tyr Phe Met Glu Met Asn Thr
 1 5 10

cgt ttg caa gtg gaa cac acc att agc gaa atg gtg agc ggg tta aac 219
 Arg Leu Gln Val Glu His Thr Ile Ser Glu Met Val Ser Gly Leu Asn
 15 20 25

ctc att gag tgg atg att aaa atc gct caa ggc gaa aaa ttg ccc aag 267
 Leu Ile Glu Trp Met Ile Lys Ile Ala Gln Gly Glu Lys Leu Pro Lys
 30 35 40

caa gaa agc ttt tct ctc aaa ggg cat gcg ata gaa tgc cga atc acg 315
 Gln Glu Ser Phe Ser Leu Lys Gly His Ala Ile Glu Cys Arg Ile Thr
 45 50 55

gca gaa gat cct aaa aaa ttc tac cca agc ccg ggc aaa att acc gaa 363
 Ala Glu Asp Pro Lys Lys Phe Tyr Pro Ser Pro Gly Lys Ile Thr Glu
 60 65 70 75

tgg atc gct cct ggt ggg gtg aat gtg cgc ctt gat tcg cac gcg cat 411
 Trp Ile Ala Pro Gly Gly Val Asn Val Arg Leu Asp Ser His Ala His
 80 85 90

gcc aat tat gtc gtg cct acg cac tat gat tcg atg att ggc aag ctc 459
 Ala Asn Tyr Val Val Pro Thr His Tyr Asp Ser Met Ile Gly Lys Leu
 95 100 105

att gtg tgg ggt gaa aac aga gaa aga gcg atc gct aag atg aaa agg 507
 Ile Val Trp Gly Glu Asn Arg Glu Arg Ala Ile Ala Lys Met Lys Arg
 110 115 120

gct tta aag gaa ttt aaa gta gaa ggc att aaa acg acc att cct ttc 555
 Ala Leu Lys Glu Phe Lys Val Glu Gly Ile Lys Thr Thr Ile Pro Phe

125	130	135	
cac ctt gaa atg ctt gaa aat gcg gat ttc agg caa gca aaa atc cac			603
His Leu Glu Met Leu Glu Asn Ala Asp Phe Arg Gln Ala Lys Ile His			
140	145	150	155
acg aag tat tta gaa gaa aat ttt taagtttttaa ggattctttt aagcatagtt			657
Thr Lys Tyr Leu Glu Glu Asn Phe			
160			
taagggtttt aagcgatcag aaaaagtcag ca			689
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His Thr Ile Ser Glu Met Val Ser Gly Leu Asn Leu Ile Glu Trp Met			
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Ile Lys Ile Ala Gln Gly Glu Lys Leu Pro Lys Gln Glu Ser Phe Ser			
35 40 45			
Leu Lys Gly His Ala Ile Glu Cys Arg Ile Thr Ala Glu Asp Pro Lys			
50 55 60			
Lys Phe Tyr Pro Ser Pro Gly Lys Ile Thr Glu Trp Ile Ala Pro Gly			
65 70 75 80			
Gly Val Asn Val Arg Leu Asp Ser His Ala His Ala Asn Tyr Val Val			
85 90 95			
Pro Thr His Tyr Asp Ser Met Ile Gly Lys Leu Ile Val Trp Gly Glu			
100 105 110			
Asn Arg Glu Arg Ala Ile Ala Lys Met Lys Arg Ala Leu Lys Glu Phe			
115 120 125			
Lys Val Glu Gly Ile Lys Thr Thr Ile Pro Phe His Leu Glu Met Leu			
130 135 140			
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Tyr His Leu Ile Ala Pro Leu Lys Asn Lys Thr Pro Pro Leu Thr Tyr	
5 10 15	
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Phe Ser Lys Glu Gln His Gln Lys Gly Ala Leu Val Asn Ile Pro Leu	
20 25 30	
agg aat aaa acg ctt tta ggc gtc gtc ctt gaa gaa gtt tca aaa ccc	200
Arg Asn Lys Thr Leu Leu Gly Val Val Leu Glu Glu Val Ser Lys Pro	
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Ser Phe Glu Cys Leu Glu Leu Glu Lys Thr Pro Tyr Phe Leu Leu Pro	
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Phe Gln Met Glu Leu Ala Ile Phe Ile Ala Gln Tyr Tyr Ser Ala Asn	
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Leu Ser Ser Val Leu Ser Leu Phe Ala Pro Phe Lys Glu Cys Asp Leu	
85 90 95	
gtg ggg tta gaa aaa att gag cct att ctt aat ata tta agc caa acg	392
Val Gly Leu Glu Lys Ile Glu Pro Ile Leu Asn Ile Leu Ser Gln Thr	
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Gln Thr Asn Ala Leu Lys Glu Leu Gln Lys His Ser Ala Ser Leu Leu	
115 120 125 130	
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Phe Gly Asp Thr Gly Ser Gly Lys Thr Glu Ile Tyr Met His Ala Ile	
135 140 145	
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Ala Gln Thr Leu Glu Gln Lys Lys Ser Ala Leu Leu Leu Val Pro Glu	
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Ile Ala Leu Thr Pro Gln Met Gln Gln Arg Leu Lys Arg Val Phe Lys	
165 170 175	
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Glu Asn Leu Gly Leu Trp His Ser Lys Leu Ser Gln Asn Gln Lys Lys	
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Gln Phe Leu Glu Lys Leu Tyr Ser Gln Glu Ile Lys Leu Val Val Gly	
195 200 205 210	
aca cga agc gcg ttg ttt tta ccc ctt aaa gag ctg ggt tta atc att	728
Thr Arg Ser Ala Leu Phe Leu Pro Leu Lys Glu Leu Gly Leu Ile Ile	

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gta gat gaa gag cat gac ttt tct tat aaa tcc cat caa agc cct atg				776
Val Asp Glu Glu His Asp Phe Ser Tyr Lys Ser His Gln Ser Pro Met				
	230	235	240	
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Tyr Asn Ala Arg Asp Leu Cys Leu Tyr Leu Ser His Lys Phe Pro Ile				
	245	250	255	
caa gtg atc tta ggc tct gct acg cca agt ttg aat agt tat aaa cgc				872
Gln Val Ile Leu Gly Ser Ala Thr Pro Ser Leu Asn Ser Tyr Lys Arg				
	260	265	270	
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Phe Lys Asp Lys Ala Leu Val Arg Leu Lys Gly Arg Tyr Thr Pro Thr				
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caa aaa aac att att ttt gaa aaa acc gag cgt ttt atc acg ccc aaa				968
Gln Lys Asn Ile Ile Phe Glu Lys Thr Glu Arg Phe Ile Thr Pro Lys				
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Leu Leu Glu Ala Leu Gln Gln Val Leu Asp Lys Asn Glu Gln Ala Ile				
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Ile Phe Val Pro Thr Arg Ala Asn Phe Lys Thr Leu Leu Cys Gln Ser				
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Cys Tyr Lys Ser Val Gln Cys Pro Phe Cys Ser Val Asn Met Ser Leu				
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cat tta aag acc aac aaa ctc atg tgc cat tat tgc cat ttt tca agc				1160
His Leu Lys Thr Asn Lys Leu Met Cys His Tyr Cys His Phe Ser Ser				
	355	360	365	370
cct atc cct aaa att tgc agc gcg tgt caa agc gaa gtc tta gtg ggt				1208
Pro Ile Pro Lys Ile Cys Ser Ala Cys Gln Ser Glu Val Leu Val Gly				
	375	380	385	
aaa agg ata ggc act atg caa gtg cta aag gaa tta gag agc ctt tta				1256
Lys Arg Ile Gly Thr Met Gln Val Leu Lys Glu Leu Glu Ser Leu Leu				
	390	395	400	
gag ggg gct aaa ata gcg att tta gat aaa gat cac act agc acg caa				1304
Glu Gly Ala Lys Ile Ala Ile Leu Asp Lys Asp His Thr Ser Thr Gln				
	405	410	415	
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Lys Lys Leu His Asn Ile Leu Asn Asp Phe Asn Ala Gln Lys Thr Asn				
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Ile Leu Ile Gly Thr Gln Met Ile Ser Lys Gly His Asp Tyr Ala Lys	
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Val Ser Leu Ala Val Val Leu Gly Ile Asp Asn Ile Ile Lys Ser Asn	
455 460 465	
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Ser Tyr Arg Ala Leu Glu Glu Gly Val Ser Leu Leu Tyr Gln Ile Ala	
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Gly Arg Ser Ala Arg Gln Ile Ser Gly Gln Val Phe Ile Gln Ser Thr	
485 490 495	
gaa acc gat ctg tta gaa aat ttc tta gaa gat tat gaa gat ttt tta	1592
Glu Thr Asp Leu Leu Glu Asn Phe Leu Glu Asp Tyr Glu Asp Phe Leu	
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Gln Tyr Glu Leu Gln Glu Arg Cys Glu Leu Tyr Pro Pro Phe Ser Arg	
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Leu Cys Leu Leu Glu Phe Lys His Lys Asn Glu Glu Lys Ala Gln Gln	
535 540 545	
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Leu Ser Leu Lys Ala Ser Gln Thr Leu Ser Ser Cys Leu Glu Lys Gly	
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Val Thr Leu Ser Asn Phe Lys Ala Pro Ile Glu Lys Ile Ala Ser Ser	
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Tyr Arg Tyr Leu Ile Leu Leu Arg Ser Lys Asn Pro Leu Ser Leu Ile	
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Lys Ser Val His Ala Phe Leu Lys Ser Ala Pro Ser Ile Pro Cys Ser	
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Pro	Leu	Arg	Asn	Lys	Thr	Leu	Leu	Gly	Val	Val	Leu	Glu	Glu	Val	Ser
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Lys	Pro	Ser	Phe	Glu	Cys	Leu	Glu	Leu	Glu	Lys	Thr	Pro	Tyr	Phe	Leu
	50					55					60				
Leu	Pro	Phe	Gln	Met	Glu	Leu	Ala	Ile	Phe	Ile	Ala	Gln	Tyr	Tyr	Ser
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Ala	Asn	Leu	Ser	Ser	Val	Leu	Ser	Leu	Phe	Ala	Pro	Phe	Lys	Glu	Cys
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Asp	Leu	Val	Gly	Leu	Glu	Lys	Ile	Glu	Pro	Ile	Leu	Asn	Ile	Leu	Ser
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Gln	Thr	Gln	Thr	Asn	Ala	Leu	Lys	Glu	Leu	Gln	Lys	His	Ser	Ala	Ser
			115					120					125		
Leu	Leu	Phe	Gly	Asp	Thr	Gly	Ser	Gly	Lys	Thr	Glu	Ile	Tyr	Met	His
	130					135					140				
Ala	Ile	Ala	Gln	Thr	Leu	Glu	Gln	Lys	Lys	Ser	Ala	Leu	Leu	Leu	Val
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Pro	Glu	Ile	Ala	Leu	Thr	Pro	Gln	Met	Gln	Gln	Arg	Leu	Lys	Arg	Val
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Phe	Lys	Glu	Asn	Leu	Gly	Leu	Trp	His	Ser	Lys	Leu	Ser	Gln	Asn	Gln
			180					185					190		
Lys	Lys	Gln	Phe	Leu	Glu	Lys	Leu	Tyr	Ser	Gln	Glu	Ile	Lys	Leu	Val
		195					200					205			
Val	Gly	Thr	Arg	Ser	Ala	Leu	Phe	Leu	Pro	Leu	Lys	Glu	Leu	Gly	Leu
	210					215					220				
Ile	Ile	Val	Asp	Glu	Glu	His	Asp	Phe	Ser	Tyr	Lys	Ser	His	Gln	Ser
225				230					235						240
Pro	Met	Tyr	Asn	Ala	Arg	Asp	Leu	Cys	Leu	Tyr	Leu	Ser	His	Lys	Phe
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Pro	Ile	Gln	Val	Ile	Leu	Gly	Ser	Ala	Thr	Pro	Ser	Leu	Asn	Ser	Tyr
			260					265					270		
Lys	Arg	Phe	Lys	Asp	Lys	Ala	Leu	Val	Arg	Leu	Lys	Gly	Arg	Tyr	Thr
		275				280						285			
Pro	Thr	Gln	Lys	Asn	Ile	Ile	Phe	Glu	Lys	Thr	Glu	Arg	Phe	Ile	Thr
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Pro	Lys	Leu	Leu	Glu	Ala	Leu	Gln	Gln	Val	Leu	Asp	Lys	Asn	Glu	Gln
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Ala	Ile	Ile	Phe	Val	Pro	Thr	Arg	Ala	Asn	Phe	Lys	Thr	Leu	Leu	Cys
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Gln	Ser	Cys	Tyr	Lys	Ser	Val	Gln	Cys	Pro	Phe	Cys	Ser	Val	Asn	Met
		340						345					350		
Ser	Leu	His	Leu	Lys	Thr	Asn	Lys	Leu	Met	Cys	His	Tyr	Cys	His	Phe
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Ser	Ser	Pro	Ile	Pro	Lys	Ile	Cys	Ser	Ala	Cys	Gln	Ser	Glu	Val	Leu
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385					390					395					400
Leu	Leu	Glu	Gly	Ala	Lys	Ile	Ala	Ile	Leu	Asp	Lys	Asp	His	Thr	Ser
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Thr	Gln	Lys	Lys	Leu	His	Asn	Ile	Leu	Asn	Asp	Phe	Asn	Ala	Gln	Lys
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Ile Val Cys Gly Ala Lys Asn Val Ala Pro Asn Gln Phe Val Pro Val	
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gct tta aac ggg gcg cta atc ggc tca acc acc atc gct aaa acg gag	399
Ala Leu Asn Gly Ala Leu Ile Gly Ser Thr Thr Ile Ala Lys Thr Glu	
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Leu Arg Gly Val Glu Ser His Gly Met Ile Cys Ser Ser Ile Glu Leu	
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Gly Phe Pro Lys Ile Asn Asp Gly Ile Leu Glu Leu Asp Glu Ser Val	
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Gly Glu Leu Val Leu Gly Lys Glu Leu Asn Glu Tyr Ala Pro Phe Asn	
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Thr His Val Leu Glu Ile Ser Leu Thr Pro Asn Arg Gly Asp Cys Leu	
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Ser Val Leu Gly Ile Ala Arg Glu Ile Ser Ala Phe Tyr His Thr Pro	
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Leu Lys Pro Ile Lys Ala Leu Asn Phe Thr Pro Lys Ser Gly Leu Ile	
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Thr Leu Ser Ala Gly Glu Asn Ile Glu Ser His Leu Ala Tyr Tyr Leu	
205 210 215	
att tgc aac cat tca tta aaa acc cct tta aat atc aaa ctt tcg ctc	783
Ile Cys Asn His Ser Leu Lys Thr Pro Leu Asn Ile Lys Leu Ser Leu	
220 225 230	
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Ala His Asn Asn Ala Leu Ser Glu Asn Asp Leu Asn Asn Phe Ile Glu	
235 240 245 250	
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Phe Ser Thr His Phe Ser Gly Val Ile Met Asn Ala Tyr Ser Leu Asn	
255 260 265	
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Thr Thr Pro Met Asp Leu Ser Val Lys Asn Asp Glu Asn Asn Leu Glu	
270 275 280	
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Ser Val Tyr Ile Asn His Gln Lys Arg Ser Thr Ile Ala Ile Lys His	

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Gln Val Gln Lys Asp Leu Ser Glu Cys Leu Leu Leu Glu Ala Ser Tyr			
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Thr Asp Pro Ile Ser Leu Ser Leu Lys Leu His Ala Leu Lys Asp Lys			
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Thr Leu Gln Lys Asp Asn Ala Leu Ile Tyr Arg Ser Ala Arg Gly Ser			
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aac cct aat tta tca gac ggc ttg aat ttt tta agc gct cat ttg aaa			1167
Asn Pro Asn Leu Ser Asp Gly Leu Asn Phe Leu Ser Ala His Leu Lys			
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gcc acg att tta gaa agc aaa caa act gag cat tct tta aaa gat cgc			1215
Ala Thr Ile Leu Glu Ser Lys Gln Thr Glu His Ser Leu Lys Asp Arg			
	365	370	375
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Thr Leu Thr Phe Gln Leu Glu Asp Ile Thr Glu Ile Leu Gly Leu Ala			
	380	385	390
gta gag aaa gaa aaa att caa ggc att tta aaa aat tta ggc ttt aaa			1311
Val Glu Lys Glu Lys Ile Gln Gly Ile Leu Lys Asn Leu Gly Phe Lys			
395	400	405	410
gtc agc gta aaa gag cca aac tca aaa ccc caa att tta gag gtt att			1359
Val Ser Val Lys Glu Pro Asn Ser Lys Pro Gln Ile Leu Glu Val Ile			
	415	420	425
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Ala Pro Asn Phe Arg His Asp Ile Lys Thr Ile Gln Asp Ile Ala Glu			
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Glu Ile Leu Arg Phe Val Gly Ile Asp Asn Leu Val Ser Lys Pro Leu			
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His Cys Val Ser Ser Lys Asn Ser Asn Pro Asn Tyr Asp Thr His Arg			
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Phe Phe Glu Asn Leu Lys His Lys Ala Leu Ala Cys Gly Phe Lys Glu			
475	480	485	490
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Val Ile His Tyr Val Phe Tyr Ser Lys Glu Lys Gln Gln Lys Leu Gly			
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Ser	Leu	Arg	Asn	Lys	Asn	Leu	Gly	Phe	Lys	Ser	Ile	Ala	Leu	Tyr	Glu		
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Gly	Lys	Ala	Trp	Asp	Phe	Tyr	Ser	Phe	Ala	Glu	Cys	Val	Ser	Lys	Val		
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Ile	Gly	Asp	Phe	Ser	Leu	Glu	Lys	Leu	Thr	Thr	Gln	Thr	Pro	Ile	Asn		
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cac	ccc	tac	cag	agc	gct	aaa	atc	att	caa	aat	cat	gaa	atc	ata	ggc	1983	
His	Pro	Tyr	Gln	Ser	Ala	Lys	Ile	Ile	Gln	Asn	His	Glu	Ile	Ile	Gly		
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gtg	atc	gct	aaa	atc	cac	cct	aaa	gtg	atc	cag	gaa	ttg	gat	ttg	ttt	2031	
Val	Ile	Ala	Lys	Ile	His	Pro	Lys	Val	Ile	Gln	Glu	Leu	Asp	Leu	Phe		
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 Ile Leu Glu Lys Ala Pro His Lys Asn Ala Glu Lys Leu Ser Val Cys
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 Gln Val Asp Val Gly Lys Glu Val Leu Gln Ile Val Cys Gly Ala Lys
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 Asn Val Ala Pro Asn Gln Phe Val Pro Val Ala Leu Asn Gly Ala Leu
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 Ile Gly Ser Thr Thr Ile Ala Lys Thr Glu Leu Arg Gly Val Glu Ser
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 His Gly Met Ile Cys Ser Ser Ile Glu Leu Gly Phe Pro Lys Ile Asn
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 Arg Glu Ile Ser Ala Phe Tyr His Thr Pro Leu Lys Pro Ile Lys Ala
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 Asn Ile Glu Ser His Leu Ala Tyr Tyr Leu Ile Cys Asn His Ser Leu
 210 215 220
 Lys Thr Pro Leu Asn Ile Lys Leu Ser Leu Ala His Asn Asn Ala Leu
 225 230 235 240
 Ser Glu Asn Asp Leu Asn Asn Phe Ile Glu Phe Ser Thr His Phe Ser
 245 250 255
 Gly Val Ile Met Asn Ala Tyr Ser Leu Asn Thr Thr Pro Met Asp Leu
 260 265 270
 Ser Val Lys Asn Asp Glu Asn Asn Leu Glu Ser Val Tyr Ile Asn His

Asn Ser Ile Ala Leu Ser Val Arg Cys Val Ile His Ser Leu Glu Lys
 725 730 735
 Thr Leu Asn Asp Glu Glu Val Asn Ser Ala Val Gln Lys Ala Leu Glu
 740 745 750
 Ile Leu Glu Lys Glu Phe Asn Ala Arg Leu Lys Gly
 755 760

<210> 329
 <211> 1097
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (492)...(1040)

<400> 329
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 acaccttaat agagcgatta gaaaagggtta ctaatagcaa agagttagaa gaagcgcgct 120
 tgaatgcttt gggtaaaaaa ggggtttttg cggataaatt caaccagctc aaacatctga 180
 acggcgaaga aaaaaacgcc ttgctaaag aaatccacca ttataaaca gcgtttgaaa 240
 aagcctttga atggaaaaaa aaggctatta tagagcttga attagaagaa cgcttgaaaa 300
 aagaaaaaat tgatgtgagc ttgtttaacg ctatcaaaac aagctcttct caccctttta 360
 actacactaa aaataaaatc attgaatttt tcacccatt aggatacaag cttgaaatcg 420
 gctcttttagt ggaagatgat ttccataatt tcagcgcttt aaacttgccc cttaccatc 480
 ctgcaagaga c atg caa gac act ttt tat ttt aaa gat cac aag ctt tta 530
 Met Gln Asp Thr Phe Tyr Phe Lys Asp His Lys Leu Leu
 1 5 10
 agg acc cac act tcg ccc gtg caa atc cac acc atg caa gaa caa acc 578
 Arg Thr His Thr Ser Pro Val Gln Ile His Thr Met Gln Glu Gln Thr
 15 20 25
 cca ccc att aag atg att tgt tta ggc gaa acc ttt agg cgc gat tat 626
 Pro Pro Ile Lys Met Ile Cys Leu Gly Glu Thr Phe Arg Arg Asp Tyr
 30 35 40 45
 gat ttg acc cac acg ccc atg ttc cac caa att gaa ggg ctt gtc gtg 674
 Asp Leu Thr His Thr Pro Met Phe His Gln Ile Glu Gly Leu Val Val
 50 55 60
 gat caa aaa ggg aat atc cgt ttc aca cat tta aaa ggt gtg atc gaa 722
 Asp Gln Lys Gly Asn Ile Arg Phe Thr His Leu Lys Gly Val Ile Glu
 65 70 75
 gac ttt ttg cat tat ttc ttt ggg ggc gtg aag tta agg tgg cgc tct 770
 Asp Phe Leu His Tyr Phe Phe Gly Gly Val Lys Leu Arg Trp Arg Ser
 80 85 90
 agc ttt ttc cct ttc aca gag cca agc gct gaa gtg gat att agt tgc 818
 Ser Phe Phe Pro Phe Thr Glu Pro Ser Ala Glu Val Asp Ile Ser Cys
 95 100 105
 gtg ttt tgc aag caa gaa ggc tgt agg gtt tgc tcg cac aca ggc tgg 866

Val Phe Cys Lys Gln Glu Gly Cys Arg Val Cys Ser His Thr Gly Trp
 110 115 120 125

tta gaa gtg ttg ggc tgt ggc atg gtc aat aat gcg gtg ttt gaa gcc 914
 Leu Glu Val Leu Gly Cys Gly Met Val Asn Asn Ala Val Phe Glu Ala
 130 135 140

ata ggg tat gag aat gtg agc ggg ttt gct ttt ggc atg ggg att gaa 962
 Ile Gly Tyr Glu Asn Val Ser Gly Phe Ala Phe Gly Met Gly Ile Glu
 145 150 155

aga tta gcc atg ctg act tgc cag atc aat gat ttg cgc agt ttc ttt 1010
 Arg Leu Ala Met Leu Thr Cys Gln Ile Asn Asp Leu Arg Ser Phe Phe
 160 165 170

gaa act gat ttg aga gtg ttg gag agc ttt taatgaaact gagcattaat 1060
 Glu Thr Asp Leu Arg Val Leu Glu Ser Phe
 175 180

gatttgaatg tttttgtcaa tacgcctaaa gatatag 1097

<210> 330
 <211> 183
 <212> PRT
 <213> Helicobacter pylori

<400> 330
 Met Gln Asp Thr Phe Tyr Phe Lys Asp His Lys Leu Leu Arg Thr His
 1 5 10 15
 Thr Ser Pro Val Gln Ile His Thr Met Gln Glu Gln Thr Pro Pro Ile
 20 25 30
 Lys Met Ile Cys Leu Gly Glu Thr Phe Arg Arg Asp Tyr Asp Leu Thr
 35 40 45
 His Thr Pro Met Phe His Gln Ile Glu Gly Leu Val Val Asp Gln Lys
 50 55 60
 Gly Asn Ile Arg Phe Thr His Leu Lys Gly Val Ile Glu Asp Phe Leu
 65 70 75 80
 His Tyr Phe Phe Gly Gly Val Lys Leu Arg Trp Arg Ser Ser Phe Phe
 85 90 95
 Pro Phe Thr Glu Pro Ser Ala Glu Val Asp Ile Ser Cys Val Phe Cys
 100 105 110
 Lys Gln Glu Gly Cys Arg Val Cys Ser His Thr Gly Trp Leu Glu Val
 115 120 125
 Leu Gly Cys Gly Met Val Asn Asn Ala Val Phe Glu Ala Ile Gly Tyr
 130 135 140
 Glu Asn Val Ser Gly Phe Ala Phe Gly Met Gly Ile Glu Arg Leu Ala
 145 150 155 160
 Met Leu Thr Cys Gln Ile Asn Asp Leu Arg Ser Phe Phe Glu Thr Asp
 165 170 175
 Leu Arg Val Leu Glu Ser Phe
 180

<210> 331
 <211> 517

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<212> DNA
<213> Helicobacter pylori

<220>
<221> CDS
<222> (51)...(464)

<400> 331
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                                         Met Lys
                                         1

aaa att gat gat atg aga cac gga aga cat tgt gtt ttt tta atg cat 104
Lys Ile Asp Asp Met Arg His Gly Arg His Cys Val Phe Leu Met His
      5              10              15

gtg cat ttt gta ttt gtt act aaa tac agg cgt tca gca ttc aat aag 152
Val His Phe Val Phe Val Thr Lys Tyr Arg Arg Ser Ala Phe Asn Lys
      20              25              30

gaa gtg ata gat ttt tta gga tcg gtg ttt gcc aaa gtg tgt aag gac 200
Glu Val Ile Asp Phe Leu Gly Ser Val Phe Ala Lys Val Cys Lys Asp
      35              40              45              50

ttt gag agc gaa ttg gta gaa ttt gat ggg gag agc gat cat gtg cat 248
Phe Glu Ser Glu Leu Val Glu Phe Asp Gly Glu Ser Asp His Val His
              55              60              65

ttg ctt atc aac tac cct cca aaa gtg agc gtg agt aag tta gtt aat 296
Leu Leu Ile Asn Tyr Pro Pro Lys Val Ser Val Ser Lys Leu Val Asn
              70              75              80

tct tta aaa ggc gtt agc agt cgt ttg act aga caa cac cat ttc aaa 344
Ser Leu Lys Gly Val Ser Ser Arg Leu Thr Arg Gln His His Phe Lys
              85              90              95

agc gtt gaa gct agt ttg tgg ggg aag cat tta tgg tcg cct agt tat 392
Ser Val Glu Ala Ser Leu Trp Gly Lys His Leu Trp Ser Pro Ser Tyr
      100              105              110

ttc gct ggg agt tgt ggg gac gcg cct tta gag atg att aag caa tac 440
Phe Ala Gly Ser Cys Gly Asp Ala Pro Leu Glu Met Ile Lys Gln Tyr
      115              120              125              130

ata caa gat caa gaa aca ccg cat taaattagct aactttgatt tttaagtaga 494
Ile Gln Asp Gln Glu Thr Pro His
              135

acgcgctaaa aagcgaatgg atc 517

<210> 332
<211> 138
<212> PRT
<213> Helicobacter pylori

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<400> 332
Met Lys Lys Ile Asp Asp Met Arg His Gly Arg His Cys Val Phe Leu
1 5 10 15
Met His Val His Phe Val Phe Val Thr Lys Tyr Arg Arg Ser Ala Phe
20 25 30
Asn Lys Glu Val Ile Asp Phe Leu Gly Ser Val Phe Ala Lys Val Cys
35 40 45
Lys Asp Phe Glu Ser Glu Leu Val Glu Phe Asp Gly Glu Ser Asp His
50 55 60
Val His Leu Leu Ile Asn Tyr Pro Pro Lys Val Ser Val Ser Lys Leu
65 70 75 80
Val Asn Ser Leu Lys Gly Val Ser Ser Arg Leu Thr Arg Gln His His
85 90 95
Phe Lys Ser Val Glu Ala Ser Leu Trp Gly Lys His Leu Trp Ser Pro
100 105 110
Ser Tyr Phe Ala Gly Ser Cys Gly Asp Ala Pro Leu Glu Met Ile Lys
115 120 125
Gln Tyr Ile Gln Asp Gln Glu Thr Pro His
130 135

<210> 333
<211> 1786
<212> DNA
<213> Helicobacter pylori

<220>
<221> CDS
<222> (51)...(1733)

<400> 333
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Met Gln
1
gaa gtc cat gat tat ggg att aaa ttt tgg agc aat aac gaa ttt aag 104
Glu Val His Asp Tyr Gly Ile Lys Phe Trp Ser Asn Asn Glu Phe Lys
5 10 15
ata gaa aaa ggc ttg gtt aaa gtc tgt cat ggt aaa aac ccc tcg ctt 152
Ile Glu Lys Gly Leu Val Lys Val Cys His Gly Lys Asn Pro Ser Leu
20 25 30
tta gaa atc gtt caa agc gtg cgc gat aag ggc tat aga gga cct ttg 200
Leu Glu Ile Val Gln Ser Val Arg Asp Lys Gly Tyr Arg Gly Pro Leu
35 40 45 50
ttg gtg cga ttc ccc cat ttg gtg caa aaa caa atc aaa agc ctg ttt 248
Leu Val Arg Phe Pro His Leu Val Gln Lys Gln Ile Lys Ser Leu Phe
55 60 65
gat gcg ttt tct tca gcg att aaa gag tat caa tac agc ggg gct ttt 296
Asp Ala Phe Ser Ser Ala Ile Lys Glu Tyr Gln Tyr Ser Gly Ala Phe
70 75 80

aag gcg gtt ttc cct tta aaa gtc aat caa atg ccc tcg ttt gtt ttc	344
Lys Ala Val Phe Pro Leu Lys Val Asn Gln Met Pro Ser Phe Val Phe	
85 90 95	
cct tta gtg cag ggg gct aag ggt ttg aat tac gga tta gag gct ggg	392
Pro Leu Val Gln Gly Ala Lys Gly Leu Asn Tyr Gly Leu Glu Ala Gly	
100 105 110	
agc aag tct gaa ctc atc atc gca atg agt tac act aac cct aaa gcc	440
Ser Lys Ser Glu Leu Ile Ile Ala Met Ser Tyr Thr Asn Pro Lys Ala	
115 120 125 130	
cct atc acc gtg aat ggc ttt aaa gac aaa gaa atg att gag ctt ggc	488
Pro Ile Thr Val Asn Gly Phe Lys Asp Lys Glu Met Ile Glu Leu Gly	
135 140 145	
ttt atc gct aaa agc atg cag cat gag atc act tta acg att gag ggt	536
Phe Ile Ala Lys Ser Met Gln His Glu Ile Thr Leu Thr Ile Glu Gly	
150 155 160	
ttg aat gaa ttg aaa acc att atc gcc gtg gct aaa caa aac gag ttt	584
Leu Asn Glu Leu Lys Thr Ile Ile Ala Val Ala Lys Gln Asn Glu Phe	
165 170 175	
tta gcc tgc cct aaa att ggc atc cgc atc cgt ttg cac agc act ggc	632
Leu Ala Cys Pro Lys Ile Gly Ile Arg Ile Arg Leu His Ser Thr Gly	
180 185 190	
act ggc gtt tgg gca aag agt ggg ggg atc aat tct aaa ttt ggt ctt	680
Thr Gly Val Trp Ala Lys Ser Gly Gly Ile Asn Ser Lys Phe Gly Leu	
195 200 205 210	
agc agc act gaa gtt tta gag gcg atg cgc ctt tta gaa gaa aac gac	728
Ser Ser Thr Glu Val Leu Glu Ala Met Arg Leu Leu Glu Glu Asn Asp	
215 220 225	
ttg tta gag cat ttc cac atg ata cat ttc cat ata ggc tct caa atc	776
Leu Leu Glu His Phe His Met Ile His Phe His Ile Gly Ser Gln Ile	
230 235 240	
agc gat att tcg ccc tta aaa aag gct tta aga gaa gcg ggt aac ttg	824
Ser Asp Ile Ser Pro Leu Lys Lys Ala Leu Arg Glu Ala Gly Asn Leu	
245 250 255	
tat gca gaa ttg cgt aaa atg ggc gct aaa aat ctt aat agc gtg aat	872
Tyr Ala Glu Leu Arg Lys Met Gly Ala Lys Asn Leu Asn Ser Val Asn	
260 265 270	
att gga ggg ggg tta gcc gta gaa tac acc caa cac aag cac cac caa	920
Ile Gly Gly Gly Leu Ala Val Glu Tyr Thr Gln His Lys His His Gln	
275 280 285 290	
gac aaa aac tac act tta gag gaa ttc agc gct gat gtg gtg ttt tta	968
Asp Lys Asn Tyr Thr Leu Glu Glu Phe Ser Ala Asp Val Val Phe Leu	
295 300 305	

ttg aga gaa att gtg aaa aat aag cag gaa atc gag ccg gac att ttc	1016
Leu Arg Glu Ile Val Lys Asn Lys Gln Glu Ile Glu Pro Asp Ile Phe	
310 315 320	
att gaa tca ggc cgt tat att tcc gct aac cat gcc gtt tta gtg gcc	1064
Ile Glu Ser Gly Arg Tyr Ile Ser Ala Asn His Ala Val Leu Val Ala	
325 330 335	
ccg gtg tta gaa ttg ttt tcg cat gaa tac aat gaa aaa tcc cta aaa	1112
Pro Val Leu Glu Leu Phe Ser His Glu Tyr Asn Glu Lys Ser Leu Lys	
340 345 350	
atc aaa gaa aat aat aac ccc cct ttg att gat gaa atg cta gac ttg	1160
Ile Lys Glu Asn Asn Asn Pro Pro Leu Ile Asp Glu Met Leu Asp Leu	
355 360 365 370	
ctc gct aat atc aat gaa aaa aac gcc att gaa tac ttg cat gat agt	1208
Leu Ala Asn Ile Asn Glu Lys Asn Ala Ile Glu Tyr Leu His Asp Ser	
375 380 385	
ttt gat cac acc gag tcg cta ttc acg ctt ttt gat ctg ggc tat att	1256
Phe Asp His Thr Glu Ser Leu Phe Thr Leu Phe Asp Leu Gly Tyr Ile	
390 395 400	
gat ttg att gac agg agc aac act gaa gtt tta gcc cat ttg atc gtc	1304
Asp Leu Ile Asp Arg Ser Asn Thr Glu Val Leu Ala His Leu Ile Val	
405 410 415	
aaa aaa gcg gtg caa ttg ctt tat gtt aag gat cat aac gat att tta	1352
Lys Lys Ala Val Gln Leu Leu Tyr Val Lys Asp His Asn Asp Ile Leu	
420 425 430	
cgc att caa gag cag gtc caa gag cgc tat tta ttg aat tgc tcg ttt	1400
Arg Ile Gln Glu Gln Val Gln Glu Arg Tyr Leu Leu Asn Cys Ser Phe	
435 440 445 450	
ttc caa agc ttg ccg gat tat tgg ggc ttg aga cag aat ttc ccg gtc	1448
Phe Gln Ser Leu Pro Asp Tyr Trp Gly Leu Arg Gln Asn Phe Pro Val	
455 460 465	
atg ccc ttg aat aaa tta gat gaa aag ccc acc agg agt gcg agc ttg	1496
Met Pro Leu Asn Lys Leu Asp Glu Lys Pro Thr Arg Ser Ala Ser Leu	
470 475 480	
tgg gat att act tgc gat agc gat ggg gaa atc gct ttt gat tcc acg	1544
Trp Asp Ile Thr Cys Asp Ser Asp Gly Glu Ile Ala Phe Asp Ser Thr	
485 490 495	
aag ccc ttg ttt ttg cac gat ata gat ata gat gaa gaa gaa tac ttt	1592
Lys Pro Leu Phe Leu His Asp Ile Asp Ile Asp Glu Glu Glu Tyr Phe	
500 505 510	
tta gcg ttc ttt tta gtg gga gcg tat caa gaa gtt tta ggc atg aaa	1640
Leu Ala Phe Phe Leu Val Gly Ala Tyr Gln Glu Val Leu Gly Met Lys	

515	520	525	530	
cac aat tta ttc acg cac cta cgg aat tta gcg tgg ttt ttg atg aaa				1688
His Asn Leu Phe Thr His Leu Arg Asn Leu Ala Trp Phe Leu Met Lys				
535	540	545		
aag gcg att atg aag tgg aag ata ttt gtg aag ccc aaa cga ttt				1733
Lys Ala Ile Met Lys Trp Lys Ile Phe Val Lys Pro Lys Arg Phe				
550	555	560		
tagatgtgct agacgattta gactatgaca ctaaagagat cgagcgcctt tta				1786
<210> 334				
<211> 561				
<212> PRT				
<213> Helicobacter pylori				
<400> 334				
Met Gln Glu Val His Asp Tyr Gly Ile Lys Phe Trp Ser Asn Asn Glu				
1 5 10 15				
Phe Lys Ile Glu Lys Gly Leu Val Lys Val Cys His Gly Lys Asn Pro				
20 25 30				
Ser Leu Leu Glu Ile Val Gln Ser Val Arg Asp Lys Gly Tyr Arg Gly				
35 40 45				
Pro Leu Leu Val Arg Phe Pro His Leu Val Gln Lys Gln Ile Lys Ser				
50 55 60				
Leu Phe Asp Ala Phe Ser Ser Ala Ile Lys Glu Tyr Gln Tyr Ser Gly				
65 70 75 80				
Ala Phe Lys Ala Val Phe Pro Leu Lys Val Asn Gln Met Pro Ser Phe				
85 90 95				
Val Phe Pro Leu Val Gln Gly Ala Lys Gly Leu Asn Tyr Gly Leu Glu				
100 105 110				
Ala Gly Ser Lys Ser Glu Leu Ile Ile Ala Met Ser Tyr Thr Asn Pro				
115 120 125				
Lys Ala Pro Ile Thr Val Asn Gly Phe Lys Asp Lys Glu Met Ile Glu				
130 135 140				
Leu Gly Phe Ile Ala Lys Ser Met Gln His Glu Ile Thr Leu Thr Ile				
145 150 155 160				
Glu Gly Leu Asn Glu Leu Lys Thr Ile Ile Ala Val Ala Lys Gln Asn				
165 170 175				
Glu Phe Leu Ala Cys Pro Lys Ile Gly Ile Arg Ile Arg Leu His Ser				
180 185 190				
Thr Gly Thr Gly Val Trp Ala Lys Ser Gly Gly Ile Asn Ser Lys Phe				
195 200 205				
Gly Leu Ser Ser Thr Glu Val Leu Glu Ala Met Arg Leu Leu Glu Glu				
210 215 220				
Asn Asp Leu Leu Glu His Phe His Met Ile His Phe His Ile Gly Ser				
225 230 235 240				
Gln Ile Ser Asp Ile Ser Pro Leu Lys Lys Ala Leu Arg Glu Ala Gly				
245 250 255				
Asn Leu Tyr Ala Glu Leu Arg Lys Met Gly Ala Lys Asn Leu Asn Ser				
260 265 270				
Val Asn Ile Gly Gly Gly Leu Ala Val Glu Tyr Thr Gln His Lys His				
275 280 285				
His Gln Asp Lys Asn Tyr Thr Leu Glu Glu Phe Ser Ala Asp Val Val				

290		295		300											
Phe	Leu	Leu	Arg	Glu	Ile	Val	Lys	Asn	Lys	Gln	Glu	Ile	Glu	Pro	Asp
305					310					315					320
Ile	Phe	Ile	Glu	Ser	Gly	Arg	Tyr	Ile	Ser	Ala	Asn	His	Ala	Val	Leu
				325					330						335
Val	Ala	Pro	Val	Leu	Glu	Leu	Phe	Ser	His	Glu	Tyr	Asn	Glu	Lys	Ser
			340					345					350		
Leu	Lys	Ile	Lys	Glu	Asn	Asn	Asn	Pro	Pro	Leu	Ile	Asp	Glu	Met	Leu
	355						360					365			
Asp	Leu	Leu	Ala	Asn	Ile	Asn	Glu	Lys	Asn	Ala	Ile	Glu	Tyr	Leu	His
370						375					380				
Asp	Ser	Phe	Asp	His	Thr	Glu	Ser	Leu	Phe	Thr	Leu	Phe	Asp	Leu	Gly
385					390					395					400
Tyr	Ile	Asp	Leu	Ile	Asp	Arg	Ser	Asn	Thr	Glu	Val	Leu	Ala	His	Leu
			405						410						415
Ile	Val	Lys	Lys	Ala	Val	Gln	Leu	Leu	Tyr	Val	Lys	Asp	His	Asn	Asp
		420						425					430		
Ile	Leu	Arg	Ile	Gln	Glu	Gln	Val	Gln	Glu	Arg	Tyr	Leu	Leu	Asn	Cys
	435					440						445			
Ser	Phe	Phe	Gln	Ser	Leu	Pro	Asp	Tyr	Trp	Gly	Leu	Arg	Gln	Asn	Phe
450					455					460					
Pro	Val	Met	Pro	Leu	Asn	Lys	Leu	Asp	Glu	Lys	Pro	Thr	Arg	Ser	Ala
465				470					475						480
Ser	Leu	Trp	Asp	Ile	Thr	Cys	Asp	Ser	Asp	Gly	Glu	Ile	Ala	Phe	Asp
			485					490							495
Ser	Thr	Lys	Pro	Leu	Phe	Leu	His	Asp	Ile	Asp	Ile	Asp	Glu	Glu	Glu
		500						505					510		
Tyr	Phe	Leu	Ala	Phe	Phe	Leu	Val	Gly	Ala	Tyr	Gln	Glu	Val	Leu	Gly
	515					520						525			
Met	Lys	His	Asn	Leu	Phe	Thr	His	Leu	Arg	Asn	Leu	Ala	Trp	Phe	Leu
530					535					540					
Met	Lys	Lys	Ala	Ile	Met	Lys	Trp	Lys	Ile	Phe	Val	Lys	Pro	Lys	Arg
545				550					555						560
Phe															

<210> 335
 <211> 676
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (51)...(623)

<400> 335	
ttaaagagga taaagagaat agtgatagcg ataatgatac tgcagacacg atg gat	56
	Met Asp
	1
 gaa gtc tta aaa gag att tta tca agt tat caa aaa aga gct tta aaa	104
Glu Val Leu Lys Glu Ile Leu Ser Ser Tyr Gln Lys Arg Ala Leu Lys	
5 10 15	

tta acc aaa aga gtt aga aag aag att ttt aag aat gat ccc aca gaa 152
 Leu Thr Lys Arg Val Arg Lys Lys Ile Phe Lys Asn Asp Pro Thr Glu
 20 25 30

aat caa aaa aaa gcc ata aag atc gct cta aat acc cct gat att gct 200
 Asn Gln Lys Lys Ala Ile Lys Ile Ala Leu Asn Thr Pro Asp Ile Ala
 35 40 45 50

att atc caa ggg cct cct gga acg ggc aaa acc act gtg atc aat gcc 248
 Ile Ile Gln Gly Pro Pro Gly Thr Gly Lys Thr Thr Val Ile Asn Ala
 55 60 65

att tgt gag aga ttg ttt gaa gaa tac cct aag gat aaa aat atc aag 296
 Ile Cys Glu Arg Leu Phe Glu Glu Tyr Pro Lys Asp Lys Asn Ile Lys
 70 75 80

ggg caa att tta ctg tgc gct caa ggg cat gat gcg act aac aat gcg 344
 Gly Gln Ile Leu Leu Cys Ala Gln Gly His Asp Ala Thr Asn Asn Ala
 85 90 95

cgt gag cgc atc aaa gta ggg gga ttg ccc act ttt aaa ttt ggt gct 392
 Arg Glu Arg Ile Lys Val Gly Gly Leu Pro Thr Phe Lys Phe Gly Ala
 100 105 110

aaa aaa aat gct aaa gaa gaa caa tac aag caa gat gaa aga ttg aat 440
 Lys Lys Asn Ala Lys Glu Glu Gln Tyr Lys Gln Asp Glu Arg Leu Asn
 115 120 125 130

gag cga ttg aga gag ttt gct gaa acg ctc ata gaa agc gtg aga aaa 488
 Glu Arg Leu Arg Glu Phe Ala Glu Thr Leu Ile Glu Ser Val Arg Lys
 135 140 145

aaa ctg caa aaa tta ggg gat tat gaa aat ata gaa aaa att ttg gat 536
 Lys Leu Gln Lys Leu Gly Asp Tyr Glu Asn Ile Glu Lys Ile Leu Asp
 150 155 160

tta gaa gaa gcc ctt aga cgc tac tat agt tcg cct atc agt gaa ttg 584
 Leu Glu Glu Ala Leu Arg Arg Tyr Tyr Ser Ser Pro Ile Ser Glu Leu
 165 170 175

gaa ttt tta aaa gaa ata gaa aaa aat gag agc ttt ttt taattcttct 633
 Glu Phe Leu Lys Glu Ile Glu Lys Asn Glu Ser Phe Phe
 180 185 190

atgcgtgaaa agctaagcca attaaaagca aggcagcaaaa aac 676

<210> 336
 <211> 191
 <212> PRT
 <213> *Helicobacter pylori*

<400> 336
 Met Asp Glu Val Leu Lys Glu Ile Leu Ser Ser Tyr Gln Lys Arg Ala
 1 5 10 15
 Leu Lys Leu Thr Lys Arg Val Arg Lys Lys Ile Phe Lys Asn Asp Pro

Leu	Leu	Ser	Glu	Ile	Val	Ile	Asp	Ser	Arg	Ser	Ser	Lys	Ile	Ala	Leu		
75						80					85						
aac	cgc	cat	tat	gcc	tta	act	cgc	ttg	caa	tgg	tgc	gat	aga	acc	tta	400	
Asn	Arg	His	Tyr	Ala	Leu	Thr	Arg	Leu	Gln	Trp	Cys	Asp	Arg	Thr	Leu		
90					95				100					105			
aga	cat	aat	ctc	caa	att	tta	gag	aga	ata	gga	ttt	cta	act	gct	ttt	448	
Arg	His	Asn	Leu	Gln	Ile	Leu	Glu	Arg	Ile	Gly	Phe	Leu	Thr	Ala	Phe		
				110					115					120			
aag	aac	aaa	aaa	ggg	tat	att	ttt	ttg	tct	atg	cat	gac	ttc	act	aaa	496	
Lys	Asn	Lys	Lys	Gly	Tyr	Ile	Phe	Leu	Ser	Met	His	Asp	Phe	Thr	Lys		
			125					130					135				
ata	gaa	aac	tac	gaa	cat	tca	ggg	ttg	aat	ggg	gag	agc	aat	tta	cct	544	
Ile	Glu	Asn	Tyr	Glu	His	Ser	Gly	Leu	Asn	Gly	Glu	Ser	Asn	Leu	Pro		
		140					145						150				
aat	agc	ttc	ttt	tta	gga	att	tgt	ggg	tat	ttg	aaa	aaa	ctc	ttc	aag	592	
Asn	Ser	Phe	Phe	Leu	Gly	Ile	Cys	Gly	Tyr	Leu	Lys	Lys	Leu	Phe	Lys		
	155					160					165						
aaa	tta	aaa	gat	aga	gca	ttc	agg	ctc	gca	aac	aag	cac	ggg	gta	ttc	640	
Lys	Leu	Lys	Asp	Arg	Ala	Phe	Arg	Leu	Ala	Asn	Lys	His	Gly	Val	Phe		
170					175					180				185			
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Val	Glu	Pro	Ala	Leu	Lys	Ala	Ile	Phe	Ser	Asn	Leu	Asn	Thr	Asn	Ile		
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Gln	Ile	Asp	Glu	Lys	Gln	Ala	Ile	Ile	Pro	Asn	Asn	Leu	Leu	His	Phe		
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Gln Leu Glu Leu Cys Lys Gly Val Tyr Lys Glu Met Tyr Ile Asp Met	
295 300 305	
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Tyr Ile Asn Ala Asn Gly Ala Lys Gly Lys Ile Asp Glu Lys Gly Tyr	
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Pro	Pro	Leu	Leu	Ser	Ala	Leu	Arg	Leu	Tyr	Leu	Arg	Gly	Asp	Leu	Glu		
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 Ser Lys Ile Lys Ser Leu Arg Lys Phe Glu Ser Asn Pro Leu Val Arg
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Ser Lys Asn Phe Ser Thr Ile Ala Val Glu Glu Ser Glu Ser Pro Met
      115                               120                               125                               130

cct aaa aca agg gaa aaa atg ggt gaa aga ccc aaa aca aaa tac ccc      488
Pro Lys Thr Arg Glu Lys Met Gly Glu Arg Pro Lys Thr Lys Tyr Pro
      135                               140                               145

aat aaa aaa gcg att aaa gcg cat aaa acc act tgt aaa agc cca aaa      536
Asn Lys Lys Ala Ile Lys Ala His Lys Thr Thr Cys Lys Ser Pro Lys
      150                               155                               160

acc agc act tct tgt ttg atg gat ttg agc ttg tca aaa tta aac tca      584
Thr Ser Thr Ser Cys Leu Met Asp Leu Ser Leu Ser Lys Leu Asn Ser
      165                               170                               175

atg cct atc ata aac att aaa aag acg ata cca aat tcg cca ata tca      632
Met Pro Ile Ile Asn Ile Lys Lys Thr Ile Pro Asn Ser Pro Ile Ser
      180                               185                               190

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gac aac aaa tca aaa tca tta att tta aaa aaa gcc gct aag acc gtt 680
 Asp Asn Lys Ser Lys Ser Leu Ile Leu Lys Lys Ala Ala Lys Thr Val
 195 200 205 210

cct gtg caa atg taaccaatga taacaggcat gtctaatttc tttaaaaaga 732
 Pro Val Gln Met

ttccaaagcc cac 745

<210> 344
 <211> 214
 <212> PRT
 <213> Helicobacter pylori

<400> 344
 Met Pro Thr Met Asn Ala Pro Lys Asp Ile Glu Asn Pro Lys Lys Trp
 1 5 10 15
 Leu Asn Pro Ala Ala Leu Gln Thr Ile Thr Lys Ile Val Pro Ile Lys
 20 25 30
 Ile Ser Gly Arg Arg Val Ser Phe Ala Cys Ser Lys Met Arg Leu Ala
 35 40 45
 Pro Phe Phe Pro Gly Asn Asn Lys Arg Thr Lys Ile Ile Pro Ala Glu
 50 55 60
 Ile Lys Val Leu Arg Met Ser Lys Leu Thr Leu Glu Ser Leu Leu Pro
 65 70 75 80
 Arg Ile Val Arg Ile Lys Ser Met Gly Met Ala Ala Ile Ser Trp Lys
 85 90 95
 Ile Lys Ile Pro Thr Ala Leu Phe Pro Met Gly Val Leu Ser Cys Leu
 100 105 110
 Glu Ser Ser Lys Asn Phe Ser Thr Ile Ala Val Glu Glu Ser Glu Ser
 115 120 125
 Pro Met Pro Lys Thr Arg Glu Lys Met Gly Glu Arg Pro Lys Thr Lys
 130 135 140
 Tyr Pro Asn Lys Lys Ala Ile Lys Ala His Lys Thr Thr Cys Lys Ser
 145 150 155 160
 Pro Lys Thr Ser Thr Ser Cys Leu Met Asp Leu Ser Leu Ser Lys Leu
 165 170 175
 Asn Ser Met Pro Ile Ile Asn Ile Lys Lys Thr Ile Pro Asn Ser Pro
 180 185 190
 Ile Ser Asp Asn Lys Ser Lys Ser Leu Ile Leu Lys Lys Ala Ala Lys
 195 200 205
 Thr Val Pro Val Gln Met
 210

<210> 345
 <211> 601
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (51)...(491)

<400> 345
gcctttgctc accctaaaga taaaaataaa attcacgaag gttacgctta atg cgt 56
Met Arg
1

tta gaa aat cta agc cag caa aaa att ctt caa ctc tct ggc ggg caa 104
Leu Glu Asn Leu Ser Gln Gln Lys Ile Leu Gln Leu Ser Gly Gly Gln
5 10 15

gcc caa cga gtc gct tta gca aga gct tta atc gca gcc aag aat cta 152
Ala Gln Arg Val Ala Leu Ala Arg Ala Leu Ile Ala Ala Lys Asn Leu
20 25 30

ttg ctt tta gat gag cct tta aac gcc tta gat aac gcc tta aaa aac 200
Leu Leu Leu Asp Glu Pro Leu Asn Ala Leu Asp Asn Ala Leu Lys Asn
35 40 45 50

gaa gtg caa caa ggt ttg ctt gat ttt atc aag cgt gaa aat tta agc 248
Glu Val Gln Gln Gly Leu Leu Asp Phe Ile Lys Arg Glu Asn Leu Ser
55 60 65

gtg tta ttg gta agc cat aac ccc aat gaa atc acc aag ctc gcg caa 296
Val Leu Leu Val Ser His Asn Pro Asn Glu Ile Thr Lys Leu Ala Gln
70 75 80

act ttc ctc ttt tta aac aat ggc gtt att gat cct aat caa gaa aat 344
Thr Phe Leu Phe Leu Asn Asn Gly Val Ile Asp Pro Asn Gln Glu Asn
85 90 95

cgg ctt ttt tca aac cgc tta tta ata aaa cct ctc ttt gaa gat gaa 392
Arg Leu Phe Ser Asn Arg Leu Leu Ile Lys Pro Leu Phe Glu Asp Glu
100 105 110

aat tat tgc cat tat gag gtc att tct caa acg att agt ttg ccc aaa 440
Asn Tyr Cys His Tyr Glu Val Ile Ser Gln Thr Ile Ser Leu Pro Lys
115 120 125 130

gat tgt ctg aac cca act ttt aag ctt gat ttc aat caa aac aaa aaa 488
Asp Cys Leu Asn Pro Thr Phe Lys Leu Asp Phe Asn Gln Asn Lys Lys
135 140 145

ttt tagaaatatt ttttcatttt cctcttaaaa ccctcttatt tttcaaaagg 541
Phe

agttgcttaa caaccgctaa aatcaaactc ttttatttta atacccaatg aaaacagagc 601

<210> 346

<211> 147

<212> PRT

<213> Helicobacter pylori

<400> 346

Met Arg Leu Glu Asn Leu Ser Gln Gln Lys Ile Leu Gln Leu Ser Gly

1	5	10	15
Gly Gln Ala Gln Arg Val Ala Leu Ala Arg Ala Leu Ile Ala Ala Lys			
20	25	30	
Asn Leu Leu Leu Leu Asp Glu Pro Leu Asn Ala Leu Asp Asn Ala Leu			
35	40	45	
Lys Asn Glu Val Gln Gln Gly Leu Leu Asp Phe Ile Lys Arg Glu Asn			
50	55	60	
Leu Ser Val Leu Leu Val Ser His Asn Pro Asn Glu Ile Thr Lys Leu			
65	70	75	80
Ala Gln Thr Phe Leu Phe Leu Asn Asn Gly Val Ile Asp Pro Asn Gln			
85	90	95	
Glu Asn Arg Leu Phe Ser Asn Arg Leu Leu Ile Lys Pro Leu Phe Glu			
100	105	110	
Asp Glu Asn Tyr Cys His Tyr Glu Val Ile Ser Gln Thr Ile Ser Leu			
115	120	125	
Pro Lys Asp Cys Leu Asn Pro Thr Phe Lys Leu Asp Phe Asn Gln Asn			
130	135	140	
Lys Lys Phe			
145			

<210> 347
 <211> 1530
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (52)...(1440)

<400> 347
 ttaagccatt tttgaataca ataagagtat tttatttttta aggttagaac a atg agt 57
 Met Ser
 1

ttg atc gtt acg cgc ttc gct cca tcg ccc act ggc tac ctc cac ata 105
 Leu Ile Val Thr Arg Phe Ala Pro Ser Pro Thr Gly Tyr Leu His Ile
 5 10 15

gga ggc tta aga aca gcc att ttc aat tat ctt ttt gca cga gcc aat 153
 Gly Gly Leu Arg Thr Ala Ile Phe Asn Tyr Leu Phe Ala Arg Ala Asn
 20 25 30

caa gga aaa ttt ttt tta cgc att gaa gac acg gat ttg agc cgt aac 201
 Gln Gly Lys Phe Phe Leu Arg Ile Glu Asp Thr Asp Leu Ser Arg Asn
 35 40 45 50

tct ata gaa gcg gct aac gcc att ata gaa gct ttc aaa tgg gta ggg 249
 Ser Ile Glu Ala Ala Asn Ala Ile Ile Glu Ala Phe Lys Trp Val Gly
 55 60 65

cta gaa tac gat ggc gaa atc ctc tac caa tcc aaa cgc ttt gag att 297
 Leu Glu Tyr Asp Gly Glu Ile Leu Tyr Gln Ser Lys Arg Phe Glu Ile
 70 75 80

tat	aaa	gaa	tac	att	caa	aaa	ctc	tta	gat	gaa	gac	aaa	gcc	tat	tat	345
Tyr	Lys	Glu	Tyr	Ile	Gln	Lys	Leu	Leu	Asp	Glu	Asp	Lys	Ala	Tyr	Tyr	
		85					90					95				
tgt	tac	atg	agc	aaa	gaa	gag	ttg	gac	gct	ttg	aga	gaa	gag	caa	aaa	393
Cys	Tyr	Met	Ser	Lys	Glu	Glu	Leu	Asp	Ala	Leu	Arg	Glu	Glu	Gln	Lys	
	100					105					110					
gcc	agg	aaa	gaa	acc	cca	cgc	tat	gac	aat	cgc	tat	cgt	gat	ttt	aaa	441
Ala	Arg	Lys	Glu	Thr	Pro	Arg	Tyr	Asp	Asn	Arg	Tyr	Arg	Asp	Phe	Lys	
	115					120				125					130	
ggc	acg	cct	cct	aaa	ggc	ata	gag	cct	gtg	gta	agg	att	aaa	gtc	ccc	489
Gly	Thr	Pro	Pro	Lys	Gly	Ile	Glu	Pro	Val	Val	Arg	Ile	Lys	Val	Pro	
				135					140					145		
caa	aat	gag	gtg	att	ggc	ttt	aat	gac	ggg	gtt	aaa	ggc	gaa	gtg	aaa	537
Gln	Asn	Glu	Val	Ile	Gly	Phe	Asn	Asp	Gly	Val	Lys	Gly	Glu	Val	Lys	
		150						155					160			
gtg	aat	act	aac	gaa	tta	gac	gat	ttt	att	atc	gcc	agg	agc	gat	ggg	585
Val	Asn	Thr	Asn	Glu	Leu	Asp	Asp	Phe	Ile	Ile	Ala	Arg	Ser	Asp	Gly	
		165					170					175				
aca	ccc	act	tat	aac	ttt	gtg	gtt	act	att	gat	gac	gct	tta	atg	ggg	633
Thr	Pro	Thr	Tyr	Asn	Phe	Val	Val	Thr	Ile	Asp	Asp	Ala	Leu	Met	Gly	
	180					185					190					
att	act	gat	gtg	att	aga	ggc	gat	gat	cac	ctt	tct	aac	acc	cct	aaa	681
Ile	Thr	Asp	Val	Ile	Arg	Gly	Asp	Asp	His	Leu	Ser	Asn	Thr	Pro	Lys	
	195				200					205					210	
caa	atc	gtt	ctt	tat	aag	gct	ttg	aat	ttt	aaa	atc	cct	aat	ttt	ttc	729
Gln	Ile	Val	Leu	Tyr	Lys	Ala	Leu	Asn	Phe	Lys	Ile	Pro	Asn	Phe	Phe	
				215					220					225		
cat	gtg	ccg	atg	att	ttg	aat	gaa	gaa	ggg	caa	aaa	tta	agc	aaa	cgc	777
His	Val	Pro	Met	Ile	Leu	Asn	Glu	Glu	Gly	Gln	Lys	Leu	Ser	Lys	Arg	
			230				235					240				
cat	ggg	gcc	act	aat	gtg	atg	gac	tat	caa	gaa	atg	ggc	tat	ctt	aag	825
His	Gly	Ala	Thr	Asn	Val	Met	Asp	Tyr	Gln	Glu	Met	Gly	Tyr	Leu	Lys	
		245					250					255				
gaa	gct	tta	gtg	aat	ttt	tta	gcg	cgt	ttg	ggg	tgg	agc	tat	cag	gat	873
Glu	Ala	Leu	Val	Asn	Phe	Leu	Ala	Arg	Leu	Gly	Trp	Ser	Tyr	Gln	Asp	
	260					265					270					
aaa	gag	gtt	ttt	agc	atg	caa	gaa	ttg	cta	gaa	tta	ttt	gat	cct	aaa	921
Lys	Glu	Val	Phe	Ser	Met	Gln	Glu	Leu	Leu	Glu	Leu	Phe	Asp	Pro	Lys	
	275				280					285					290	
gat	ttg	aat	tct	tcg	ccc	agt	tgc	ttc	agc	tgg	cac	aag	ctt	aat	tgg	969
Asp	Leu	Asn	Ser	Ser	Pro	Ser	Cys	Phe	Ser	Trp	His	Lys	Leu	Asn	Trp	
				295					300					305		

ctc aac gct cat tat tta aaa aac caa agt gtg caa gaa ttg tta aaa 1017
 Leu Asn Ala His Tyr Leu Lys Asn Gln Ser Val Gln Glu Leu Leu Lys
 310 315 320

ctt tta aag cct ttt agt ttt agc gat ctc tcg cat tta aac ccc act 1065
 Leu Leu Lys Pro Phe Ser Phe Ser Asp Leu Ser His Leu Asn Pro Thr
 325 330 335

caa ttg gat cgc ttg tta gac gct ctc aaa gaa aga tct caa aca cta 1113
 Gln Leu Asp Arg Leu Leu Asp Ala Leu Lys Glu Arg Ser Gln Thr Leu
 340 345 350

aaa gaa tta gcc ctt aaa ata gat gag gtt tta atc gcc cct gtg gag 1161
 Lys Glu Leu Ala Leu Lys Ile Asp Glu Val Leu Ile Ala Pro Val Glu
 355 360 365 370

tat gaa gaa aag gtt ttt aaa aaa ctc aat caa gcg ctc gtt atg ccc 1209
 Tyr Glu Glu Lys Val Phe Lys Lys Leu Asn Gln Ala Leu Val Met Pro
 375 380 385

ttg tta gaa aag ttt aag cta gaa tta aac aaa gcc aat ttc aac gat 1257
 Leu Leu Glu Lys Phe Lys Leu Glu Leu Asn Lys Ala Asn Phe Asn Asp
 390 395 400

gaa agc gcg cta gaa aac gcc atg cgc caa atc att gaa gaa gaa aag 1305
 Glu Ser Ala Leu Glu Asn Ala Met Arg Gln Ile Ile Glu Glu Glu Lys
 405 410 415

att aaa gcg ggt agt ttt atg cag cct tta aga ttg gcc ctt ttg ggt 1353
 Ile Lys Ala Gly Ser Phe Met Gln Pro Leu Arg Leu Ala Leu Leu Gly
 420 425 430

aag gga ggc ggg ata ggc ctt aaa gaa gcg ctt ttt att tta ggc aaa 1401
 Lys Gly Gly Gly Ile Gly Leu Lys Glu Ala Leu Phe Ile Leu Gly Lys
 435 440 445 450

aca gag agc gtc aaa aga ata gag gat ttt ttg aaa aac taaaaaattg 1450
 Thr Glu Ser Val Lys Arg Ile Glu Asp Phe Leu Lys Asn
 455 460

gctctgtttt cattgggtat taaaataaaa gagtttgatt ttagcggttg ttaagcaact 1510
 ccttttgaaa aataagaggg 1530

<210> 348

<211> 463

<212> PRT

<213> Helicobacter pylori

<400> 348

Met Ser Leu Ile Val Thr Arg Phe Ala Pro Ser Pro Thr Gly Tyr Leu
 1 5 10 15
 His Ile Gly Gly Leu Arg Thr Ala Ile Phe Asn Tyr Leu Phe Ala Arg
 20 25 30
 Ala Asn Gln Gly Lys Phe Phe Leu Arg Ile Glu Asp Thr Asp Leu Ser

-448-

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<220>
<221> CDS
<222> (51) ... (329)
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<400> 349																
ccta	atg	att	tttt	ctat	ct	tgcccc	ccctt	atgt	gttaga	aaatt	ctaaa	atg	ttt		56	
												Met	Phe			
												1				
aag	ggg	att	tat	cct	atg	cgt	aat	ttt	cct	atc	cac	cat	aat	ggg	ttt	104
Lys	Gly	Ile	Tyr	Pro	Met	Arg	Asn	Phe	Pro	Ile	His	His	Asn	Gly	Phe	
		5					10					15				
aaa	cat	gaa	gtg	tta	gct	cac	atg	cta	aaa	agg	cat	aaa	gag	cca	ttt	152
Lys	His	Glu	Val	Leu	Ala	His	Met	Leu	Lys	Arg	His	Lys	Glu	Pro	Phe	
	20					25					30					
att	tta	agc	tat	aat	gac	tgc	gaa	ttt	gta	agg	aat	gct	tat	aaa	gat	200
Ile	Leu	Ser	Tyr	Asn	Asp	Cys	Glu	Phe	Val	Arg	Asn	Ala	Tyr	Lys	Asp	
	35				40					45					50	
ttt	aaa	att	tta	gaa	cca	tct	tgg	caa	tac	act	atg	gga	caa	ggc	gag	248
Phe	Lys	Ile	Leu	Glu	Pro	Ser	Trp	Gln	Tyr	Thr	Met	Gly	Gln	Gly	Glu	
			55					60					65			
atc	aga	atg	ggg	aaa	aat	cgc	tta	gaa	aga	ggc	gat	aat	aac	cat	gtc	296
Ile	Arg	Met	Gly	Lys	Asn	Arg	Leu	Glu	Arg	Gly	Asp	Asn	Asn	His	Val	
			70					75					80			
aaa	caa	tct	cat	gag	tta	ttg	att	atc	aag	gag	taaaaa	atgca	tattag	cgaa		349
Lys	Gln	Ser	His	Glu	Leu	Leu	Ile	Ile	Lys	Glu						
		85				90										
gtc	aaaa	actg	cctt	taaaa	at	cgct	gatg	ta	gaa							382

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<210> 350
<211> 93
<212> PRT
<213> Helicobacter pylori
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<400> 350															
Met	Phe	Lys	Gly	Ile	Tyr	Pro	Met	Arg	Asn	Phe	Pro	Ile	His	His	Asn
1				5					10					15	
Gly	Phe	Lys	His	Glu	Val	Leu	Ala	His	Met	Leu	Lys	Arg	His	Lys	Glu
			20					25					30		
Pro	Phe	Ile	Leu	Ser	Tyr	Asn	Asp	Cys	Glu	Phe	Val	Arg	Asn	Ala	Tyr
		35					40					45			
Lys	Asp	Phe	Lys	Ile	Leu	Glu	Pro	Ser	Trp	Gln	Tyr	Thr	Met	Gly	Gln
	50					55					60				
Gly	Glu	Ile	Arg	Met	Gly	Lys	Asn	Arg	Leu	Glu	Arg	Gly	Asp	Asn	Asn

65		70		75		80
His	Val	Lys	Gln	Ser	His	Glu
				Leu	Leu	Ile
				Ile	Ile	Lys
						Glu
		85		90		

<210> 351
 <211> 376
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (183)...(323)

<400> 351
 atccacaaat tccacttcat tttctttgca aaattcaaaa aattctttga tcttgctttc 60
 actatcttga gttcttacta tcattaacca cctttaattg ttatgaattg agtttgattg 120
 ataggggtga ttatagcatt tatggggcaa aaaaagtaga atctgtatca agttttatta 180
 ag atg cat gcg gta aaa tcc gct aaa tca agg agt gtt att atg gaa 227
 Met His Ala Val Lys Ser Ala Lys Ser Arg Ser Val Ile Met Glu
 1 5 10 15
 gca gac gca acc aca cta tta gga ttt ttt gaa gaa aat caa aac aat 275
 Ala Asp Ala Thr Thr Leu Leu Gly Phe Phe Glu Glu Asn Gln Asn Asn
 20 25 30
 caa ttt gtc att cct atc tat cag agg ttg tat agt tgg aaa aag gaa 323
 Gln Phe Val Ile Pro Ile Tyr Gln Arg Leu Tyr Ser Trp Lys Lys Glu
 35 40 45
 taatgcgaac aattatggga tgatattata aaaattggtg ggaatgataa gat 376

<210> 352
 <211> 47
 <212> PRT
 <213> Helicobacter pylori

<400> 352
 Met His Ala Val Lys Ser Ala Lys Ser Arg Ser Val Ile Met Glu Ala
 1 5 10 15
 Asp Ala Thr Thr Leu Leu Gly Phe Phe Glu Glu Asn Gln Asn Asn Gln
 20 25 30
 Phe Val Ile Pro Ile Tyr Gln Arg Leu Tyr Ser Trp Lys Lys Glu
 35 40 45

<210> 353
 <211> 1021
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (51)...(968)

<400> 353

tattaatggg gtttgtggga ttgaatgcta gtgacgttt gttagaaatc atg cgc	56
Met Arg	
1	
ctt tat caa aaa caa ggc ttg gaa atg gtg ggt caa aag ttg gat tct	104
Leu Tyr Gln Lys Gln Gly Leu Glu Met Val Gly Gln Lys Leu Asp Ser	
5 10 15	
tat tta gcg gat aaa tct ttt tgg gca gaa gaa ctt caa aac aag gac	152
Tyr Leu Ala Asp Lys Ser Phe Trp Ala Glu Glu Leu Gln Asn Lys Asp	
20 25 30	
acg gat ttt ggc tat tat caa aac aag cag ttt tta ttt gtg gct aat	200
Thr Asp Phe Gly Tyr Tyr Gln Asn Lys Gln Phe Leu Phe Val Ala Asn	
35 40 45 50	
aaa tcc aag ccc agt ttg gag ttt tat gag ata gaa aat aac atg ctt	248
Lys Ser Lys Pro Ser Leu Glu Phe Tyr Glu Ile Glu Asn Asn Met Leu	
55 60 65	
aaa aaa atc aac agc tct aaa gct ctt gta ggc tct aaa aag ggc gat	296
Lys Lys Ile Asn Ser Ser Lys Ala Leu Val Gly Ser Lys Lys Gly Asp	
70 75 80	
aag act tta gag ggc gat ttg gcc acg cct att gga gtg tat cgt atc	344
Lys Thr Leu Glu Gly Asp Leu Ala Thr Pro Ile Gly Val Tyr Arg Ile	
85 90 95	
acg cag aaa tta gag cgc ttg gat caa tat tat ggc gtt ttg gct ttt	392
Thr Gln Lys Leu Glu Arg Leu Asp Gln Tyr Tyr Gly Val Leu Ala Phe	
100 105 110	
gta acg aat tac cct aat ttg tat gat acc ttg aaa aaa cgc acc ggg	440
Val Thr Asn Tyr Pro Asn Leu Tyr Asp Thr Leu Lys Lys Arg Thr Gly	
115 120 125 130	
cat ggc att tgg gtg cat gga atg cct tta aat ggc gat cgg aat gaa	488
His Gly Ile Trp Val His Gly Met Pro Leu Asn Gly Asp Arg Asn Glu	
135 140 145	
ttg aac acc aag ggc tgt att gcg att gaa aac ccg ctt tta agc tct	536
Leu Asn Thr Lys Gly Cys Ile Ala Ile Glu Asn Pro Leu Leu Ser Ser	
150 155 160	
tat gac aaa gtg tta aaa ggc gaa aaa gcg ttc ctc atc acc tat gaa	584
Tyr Asp Lys Val Leu Lys Gly Glu Lys Ala Phe Leu Ile Thr Tyr Glu	
165 170 175	
gac aag ttt ttc cca agc acc aaa gaa gaa ttg agc atg att tta agc	632
Asp Lys Phe Phe Pro Ser Thr Lys Glu Glu Leu Ser Met Ile Leu Ser	
180 185 190	
tcc ctt ttt caa tgg aaa gaa gcc tgg gct agg ggc gat ttt gaa cgc	680
Ser Leu Phe Gln Trp Lys Glu Ala Trp Ala Arg Gly Asp Phe Glu Arg	

195	200	205	210	
tac atg cgt ttt tat aac ccc aat ttc act cgc tat gac ggc atg aaa				728
Tyr Met Arg Phe Tyr Asn Pro Asn Phe Thr Arg Tyr Asp Gly Met Lys	215	220	225	
ttt aac gct ttt aaa gag tat aaa aaa agg gtg ttt gca aaa aac gaa				776
Phe Asn Ala Phe Lys Glu Tyr Lys Lys Arg Val Phe Ala Lys Asn Glu	230	235	240	
aaa aag aat atc gct ttt tcc tct atc aat gtg atc cct tac ccc aac				824
Lys Lys Asn Ile Ala Phe Ser Ser Ile Asn Val Ile Pro Tyr Pro Asn	245	250	255	
tct cag aac aaa cgc ttg ttt tat gtg gtg ttt gac caa gat tat aaa				872
Ser Gln Asn Lys Arg Leu Phe Tyr Val Val Phe Asp Gln Asp Tyr Lys	260	265	270	
gcc tac cag cat aac aag ctc tct tat agc tcc aat tct caa aaa gaa				920
Ala Tyr Gln His Asn Lys Leu Ser Tyr Ser Ser Asn Ser Gln Lys Glu	275	280	285	290
ctc tat ata gag att gaa aac aat caa gtg tct att ata atg gaa aaa				968
Leu Tyr Ile Glu Ile Glu Asn Asn Gln Val Ser Ile Ile Met Glu Lys	295	300	305	
taagaaaaat agggctttgt ttttaattagg ataatctaag cggatttttc taa				1021

<210> 354

<211> 306

<212> PRT

<213> Helicobacter pylori

<400> 354

Met Arg Leu Tyr Gln Lys Gln Gly Leu Glu Met Val Gly Gln Lys Leu				
1 5 10 15				
Asp Ser Tyr Leu Ala Asp Lys Ser Phe Trp Ala Glu Glu Leu Gln Asn				
20 25 30				
Lys Asp Thr Asp Phe Gly Tyr Tyr Gln Asn Lys Gln Phe Leu Phe Val				
35 40 45				
Ala Asn Lys Ser Lys Pro Ser Leu Glu Phe Tyr Glu Ile Glu Asn Asn				
50 55 60				
Met Leu Lys Lys Ile Asn Ser Ser Lys Ala Leu Val Gly Ser Lys Lys				
65 70 75 80				
Gly Asp Lys Thr Leu Glu Gly Asp Leu Ala Thr Pro Ile Gly Val Tyr				
85 90 95				
Arg Ile Thr Gln Lys Leu Glu Arg Leu Asp Gln Tyr Tyr Gly Val Leu				
100 105 110				
Ala Phe Val Thr Asn Tyr Pro Asn Leu Tyr Asp Thr Leu Lys Lys Arg				
115 120 125				
Thr Gly His Gly Ile Trp Val His Gly Met Pro Leu Asn Gly Asp Arg				
130 135 140				
Asn Glu Leu Asn Thr Lys Gly Cys Ile Ala Ile Glu Asn Pro Leu Leu				
145 150 155 160				
Ser Ser Tyr Asp Lys Val Leu Lys Gly Glu Lys Ala Phe Leu Ile Thr				

				165					170					175			
Tyr	Glu	Asp	Lys	Phe	Phe	Pro	Ser	Thr	Lys	Glu	Glu	Leu	Ser	Met	Ile		
			180					185					190				
Leu	Ser	Ser	Leu	Phe	Gln	Trp	Lys	Glu	Ala	Trp	Ala	Arg	Gly	Asp	Phe		
		195					200					205					
Glu	Arg	Tyr	Met	Arg	Phe	Tyr	Asn	Pro	Asn	Phe	Thr	Arg	Tyr	Asp	Gly		
	210					215					220						
Met	Lys	Phe	Asn	Ala	Phe	Lys	Glu	Tyr	Lys	Lys	Arg	Val	Phe	Ala	Lys		
225				230						235					240		
Asn	Glu	Lys	Lys	Asn	Ile	Ala	Phe	Ser	Ser	Ile	Asn	Val	Ile	Pro	Tyr		
			245					250					255				
Pro	Asn	Ser	Gln	Asn	Lys	Arg	Leu	Phe	Tyr	Val	Val	Phe	Asp	Gln	Asp		
		260					265					270					
Tyr	Lys	Ala	Tyr	Gln	His	Asn	Lys	Leu	Ser	Tyr	Ser	Ser	Asn	Ser	Gln		
	275					280					285						
Lys	Glu	Leu	Tyr	Ile	Glu	Ile	Glu	Asn	Asn	Gln	Val	Ser	Ile	Ile	Met		
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Phe Tyr Arg Thr Thr Leu Ser Phe Leu Lys Pro Leu Leu Leu Leu Leu	
5 10 15 20	
gtt tta tta ttg ccg ttt tca ctt tgt ata gct gat gaa tat att agc	150
Val Leu Leu Leu Pro Phe Ser Leu Cys Ile Ala Asp Glu Tyr Ile Ser	
25 30 35	
ata agt gat gat tgg gat gaa att gtg cga aat cat aag aca tat tat	198
Ile Ser Asp Asp Trp Asp Glu Ile Val Arg Asn His Lys Thr Tyr Tyr	
40 45 50	
ttt gaa aat ggt tta gac cat ttt aat caa ggc caa tac cag caa gcc	246
Phe Glu Asn Gly Leu Asp His Phe Asn Gln Gly Gln Tyr Gln Gln Ala	
55 60 65	
ttt aaa gat ttt aga ttg gcg caa gaa tac agc atc ggg ctt ggc agt	294
Phe Lys Asp Phe Arg Leu Ala Gln Glu Tyr Ser Ile Gly Leu Gly Ser	
70 75 80	

gtt tat tta gcc aaa atg tat ttg gag gga aag ggc gtg aaa gtg gat 342
 Val Tyr Leu Ala Lys Met Tyr Leu Glu Gly Lys Gly Val Lys Val Asp
 85 90 95 100

tac aaa aaa gca caa ttt tat gca gaa aac gct atc aaa ggg tat ggg 390
 Tyr Lys Lys Ala Gln Phe Tyr Ala Glu Asn Ala Ile Lys Gly Tyr Gly
 105 110 115

agc gga ttg tta ggg ggt gct ctt att tta gga cgc atg caa gca gaa 438
 Ser Gly Leu Leu Gly Gly Ala Leu Ile Leu Gly Arg Met Gln Ala Glu
 120 125 130

ggc tta ggg atg aaa aag gat ttg aaa caa gcg ctc aag act tat agg 486
 Gly Leu Gly Met Lys Lys Asp Leu Lys Gln Ala Leu Lys Thr Tyr Arg
 135 140 145

cat gtg gtt cgc atg ttt tct aat aaa agc aca aat ttt gct aac aat 534
 His Val Val Arg Met Phe Ser Asn Lys Ser Thr Asn Phe Ala Asn Asn
 150 155 160

ttt aga tta cca aac ctt gcg gaa ttt act agt atg ctt att gga tcg 582
 Phe Arg Leu Pro Asn Leu Ala Glu Phe Thr Ser Met Leu Ile Gly Ser
 165 170 175 180

cga ttc att gat ctt tca ggt ttg agc gcg aat cct ata aaa ttt gga 630
 Arg Phe Ile Asp Leu Ser Gly Leu Ser Ala Asn Pro Ile Lys Phe Gly
 185 190 195

aag aaa ttt gga ata ctt gtt aag aaa tcc act caa atc aaa gat aag 678
 Lys Lys Phe Gly Ile Leu Val Lys Lys Ser Thr Gln Ile Lys Asp Lys
 200 205 210

aca ctt ctt tgg gaa gat att gct gaa att tca agc aat att act tta 726
 Thr Leu Leu Trp Glu Asp Ile Ala Glu Ile Ser Ser Asn Ile Thr Leu
 215 220 225

ctc aaa caa caa atg ggg gag atc ctt tat agg att ggg atc gct tat 774
 Leu Lys Gln Gln Met Gly Glu Ile Leu Tyr Arg Ile Gly Ile Ala Tyr
 230 235 240

aaa gaa ggg ctt ggc act aga aag aaa aag gac agg gct aaa aaa ttc 822
 Lys Glu Gly Leu Gly Thr Arg Lys Lys Lys Asp Arg Ala Lys Lys Phe
 245 250 255 260

ctg caa aaa tcc gca gaa ttt ggc tat gaa aaa gcc atg gaa gct ctg 870
 Leu Gln Lys Ser Ala Glu Phe Gly Tyr Glu Lys Ala Met Glu Ala Leu
 265 270 275

tagtttttta atcaaacttg tatcaagctt gactgaatgg gttagaaaaa tccgcttaga 930
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<213> Helicobacter pylori

<400> 356

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      20           25           30
Glu Tyr Ile Ser Ile Ser Asp Asp Trp Asp Glu Ile Val Arg Asn His
      35           40           45
Lys Thr Tyr Tyr Phe Glu Asn Gly Leu Asp His Phe Asn Gln Gly Gln
      50           55           60
Tyr Gln Gln Ala Phe Lys Asp Phe Arg Leu Ala Gln Glu Tyr Ser Ile
      65           70           75           80
Gly Leu Gly Ser Val Tyr Leu Ala Lys Met Tyr Leu Glu Gly Lys Gly
      85           90           95
Val Lys Val Asp Tyr Lys Lys Ala Gln Phe Tyr Ala Glu Asn Ala Ile
      100          105          110
Lys Gly Tyr Gly Ser Gly Leu Leu Gly Gly Ala Leu Ile Leu Gly Arg
      115          120          125
Met Gln Ala Glu Gly Leu Gly Met Lys Lys Asp Leu Lys Gln Ala Leu
      130          135          140
Lys Thr Tyr Arg His Val Val Arg Met Phe Ser Asn Lys Ser Thr Asn
      145          150          155          160
Phe Ala Asn Asn Phe Arg Leu Pro Asn Leu Ala Glu Phe Thr Ser Met
      165          170          175
Leu Ile Gly Ser Arg Phe Ile Asp Leu Ser Gly Leu Ser Ala Asn Pro
      180          185          190
Ile Lys Phe Gly Lys Lys Phe Gly Ile Leu Val Lys Lys Ser Thr Gln
      195          200          205
Ile Lys Asp Lys Thr Leu Leu Trp Glu Asp Ile Ala Glu Ile Ser Ser
      210          215          220
Asn Ile Thr Leu Leu Lys Gln Gln Met Gly Glu Ile Leu Tyr Arg Ile
      225          230          235          240
Gly Ile Ala Tyr Lys Glu Gly Leu Gly Thr Arg Lys Lys Lys Asp Arg
      245          250          255
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      260          265          270
Met Glu Ala Leu
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48

gag aaa tta ctc acc cct gaa gcg aga aaa ctc tta gaa gaa gct aaa	96
Glu Lys Leu Leu Thr Pro Glu Ala Arg Lys Leu Leu Glu Glu Ala Lys	
20 25 30	
gag agc gtt aaa gct tat aaa gac tgc gta tca aaa gct agg aat gaa	144
Glu Ser Val Lys Ala Tyr Lys Asp Cys Val Ser Lys Ala Arg Asn Glu	
35 40 45	
aaa gag aaa aaa gaa tgc gag aaa tta ctc acg cct gaa gcg aaa aaa	192
Lys Glu Lys Lys Glu Cys Glu Lys Leu Leu Thr Pro Glu Ala Lys Lys	
50 55 60	
ctt tta gag caa caa gtg cta gat tgt ttg aaa aac gct aaa acc gaa	240
Leu Leu Glu Gln Gln Val Leu Asp Cys Leu Lys Asn Ala Lys Thr Glu	
65 70 75 80	
gct gat aaa aaa agg tgt gtc aaa gat ctc cct aaa gac ttg cag aaa	288
Ala Asp Lys Lys Arg Cys Val Lys Asp Leu Pro Lys Asp Leu Gln Lys	
85 90 95	
aag gtt tta gct aaa gag agc gtt aag gct tat ttg gac tgc gta tca	336
Lys Val Leu Ala Lys Glu Ser Val Lys Ala Tyr Leu Asp Cys Val Ser	
100 105 110	
aga gct agg aat gaa aaa gag aaa aaa gaa tgc gag aaa ttg ctc acc	384
Arg Ala Arg Asn Glu Lys Glu Lys Lys Glu Cys Glu Lys Leu Leu Thr	
115 120 125	
cct gaa gcg aaa aaa ctt tta gaa gaa gcc aaa gag agt ctt aaa gct	432
Pro Glu Ala Lys Lys Leu Leu Glu Glu Ala Lys Glu Ser Leu Lys Ala	
130 135 140	
tat aaa gac tgc ctc tct caa gct aga aat gaa gaa gaa agg aga gct	480
Tyr Lys Asp Cys Leu Ser Gln Ala Arg Asn Glu Glu Glu Arg Arg Ala	
145 150 155 160	
tgc gag aaa cta ctc acg cct gaa gcg aga aaa ctc tta gag caa gaa	528
Cys Glu Lys Leu Leu Thr Pro Glu Ala Arg Lys Leu Leu Glu Gln Glu	
165 170 175	
gtt aag aaa agc att aag gct tat ttg gac tgc gta tca aga gct agg	576
Val Lys Lys Ser Ile Lys Ala Tyr Leu Asp Cys Val Ser Arg Ala Arg	
180 185 190	
aat gaa aaa gag aaa aaa gaa tgc gag aaa tta ctc acg cct gaa gcg	624
Asn Glu Lys Glu Lys Lys Glu Cys Glu Lys Leu Leu Thr Pro Glu Ala	
195 200 205	
aga aaa ttt tta gcg aag caa gtg cta aat tgt ttg gaa aaa gct gga	672
Arg Lys Phe Leu Ala Lys Gln Val Leu Asn Cys Leu Glu Lys Ala Gly	
210 215 220	
aat gaa gaa gaa aga aaa gca tgt ctt aaa aat ctc cct aaa gac tta	720
Asn Glu Glu Glu Arg Lys Ala Cys Leu Lys Asn Leu Pro Lys Asp Leu	
225 230 235 240	

cag gaa aat att tta gct aaa gag agt ctt aaa gct tat aaa gac tgc	768
Gln Glu Asn Ile Leu Ala Lys Glu Ser Leu Lys Ala Tyr Lys Asp Cys	
245 250 255	
ctc tct caa gct aga aat gaa gaa gaa agg aga gct tgc gag aaa cta	816
Leu Ser Gln Ala Arg Asn Glu Glu Glu Arg Arg Ala Cys Glu Lys Leu	
260 265 270	
ctc acg cct gaa gcg aga aaa ctc tta gag caa gaa gtt aag aaa agc	864
Leu Thr Pro Glu Ala Arg Lys Leu Leu Glu Gln Glu Val Lys Lys Ser	
275 280 285	
gtt aag gct tat ttg gac tgc gta tca aga gct agg aat gaa aaa gag	912
Val Lys Ala Tyr Leu Asp Cys Val Ser Arg Ala Arg Asn Glu Lys Glu	
290 295 300	
aaa aaa gaa tgc gag aaa tta ctc acg cct gaa gcg aga aaa ttt tta	960
Lys Lys Glu Cys Glu Lys Leu Leu Thr Pro Glu Ala Arg Lys Phe Leu	
305 310 315 320	
gcg aaa gaa ctc caa caa aaa gat aaa gcg atc aaa gat tgc ttg aaa	1008
Ala Lys Glu Leu Gln Gln Lys Asp Lys Ala Ile Lys Asp Cys Leu Lys	
325 330 335	
aac gcc gat cct aac gac aga gcg gct atc atg aag tgt ttg gat ggt	1056
Asn Ala Asp Pro Asn Asp Arg Ala Ala Ile Met Lys Cys Leu Asp Gly	
340 345 350	
ttg agc gat gaa gag aag ctc aaa tac ctg caa gaa gct aga gaa aag	1104
Leu Ser Asp Glu Glu Lys Leu Lys Tyr Leu Gln Glu Ala Arg Glu Lys	
355 360 365	
gct gtt gcg gat tgt ttg gct atg gct aaa acc gat gaa gaa aaa agg	1152
Ala Val Ala Asp Cys Leu Ala Met Ala Lys Thr Asp Glu Glu Lys Arg	
370 375 380	
aaa tgc caa aac ctt tat agc gat ttg atc caa gaa atc caa aat aaa	1200
Lys Cys Gln Asn Leu Tyr Ser Asp Leu Ile Gln Glu Ile Gln Asn Lys	
385 390 395 400	
agg aca caa aac aaa caa aat caa ttg agt aaa aca gaa agg ttg cat	1248
Arg Thr Gln Asn Lys Gln Asn Gln Leu Ser Lys Thr Glu Arg Leu His	
405 410 415	
caa gca agc gag tgc ttg gat aac tta gat gac cct act gat caa gag	1296
Gln Ala Ser Glu Cys Leu Asp Asn Leu Asp Asp Pro Thr Asp Gln Glu	
420 425 430	
gcc ata gag caa tgt tta gag ggc ttg agc gat agt gaa agg gcg cta	1344
Ala Ile Glu Gln Cys Leu Glu Gly Leu Ser Asp Ser Glu Arg Ala Leu	
435 440 445	
att cta gga att aaa cga caa gct gat gaa gtg gat ctg att tat agc	1392
Ile Leu Gly Ile Lys Arg Gln Ala Asp Glu Val Asp Leu Ile Tyr Ser	

450	455	460	
gat cta aga aac cgt aaa acc ttt gat aac atg gcg gct aaa ggt tat			1440
Asp Leu Arg Asn Arg Lys Thr Phe Asp Asn Met Ala Ala Lys Gly Tyr			
465	470	475	480
cca ttg tta cca atg gat ttc aaa aat ggc ggc gat att gcc act att			1488
Pro Leu Leu Pro Met Asp Phe Lys Asn Gly Gly Asp Ile Ala Thr Ile			
	485	490	495
aac gcc act aat gtt gat gcg gac aaa ata gct agc gat aat cct att			1536
Asn Ala Thr Asn Val Asp Ala Asp Lys Ile Ala Ser Asp Asn Pro Ile			
	500	505	510
tat gct tcc ata gag cct gat att gcc aag caa tac gaa aca gaa aaa			1584
Tyr Ala Ser Ile Glu Pro Asp Ile Ala Lys Gln Tyr Glu Thr Glu Lys			
	515	520	525
acc att aag gat aag aat tta gaa gct aaa tta gct aag gct tta ggt			1632
Thr Ile Lys Asp Lys Asn Leu Glu Ala Lys Leu Ala Lys Ala Leu Gly			
	530	535	540
ggc aat aaa aaa gat gac gat aaa gaa aaa agt aaa aaa tcc aca gca			1680
Gly Asn Lys Lys Asp Asp Asp Lys Glu Lys Ser Lys Lys Ser Thr Ala			
545	550	555	560
gaa gct aaa gca gaa aac aat aag ata gac aaa gat gtc gca gaa act			1728
Glu Ala Lys Ala Glu Asn Asn Lys Ile Asp Lys Asp Val Ala Glu Thr			
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gcc aag aat atc agt gaa atc gct ctt aag aac aaa aaa gaa aag agt			1776
Ala Lys Asn Ile Ser Glu Ile Ala Leu Lys Asn Lys Lys Glu Lys Ser			
	580	585	590
ggg gaa ttt gta gat gaa aat ggt aat ccc att gat gac aaa aag aaa			1824
Gly Glu Phe Val Asp Glu Asn Gly Asn Pro Ile Asp Asp Lys Lys Lys			
	595	600	605
gca gaa aaa caa gat gaa aca agc cct gtc aaa cag gcc ttt ata ggc			1872
Ala Glu Lys Gln Asp Glu Thr Ser Pro Val Lys Gln Ala Phe Ile Gly			
610	615	620	
aag agt gat ccc aca ttt gtt tta gcg caa tac acc ccc att gaa atc			1920
Lys Ser Asp Pro Thr Phe Val Leu Ala Gln Tyr Thr Pro Ile Glu Ile			
625	630	635	640
act ctg act tct aaa gta gat gcc act ctc aca ggt ata gtg agt ggg			1968
Thr Leu Thr Ser Lys Val Asp Ala Thr Leu Thr Gly Ile Val Ser Gly			
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gtt gta gcc aaa gat gta tgg aac atg aac ggc act atg atc tta tta			2016
Val Val Ala Lys Asp Val Trp Asn Met Asn Gly Thr Met Ile Leu Leu			
	660	665	670
gac aaa ggc act aag gtg tat ggg aat tat caa agc gtg aaa ggt ggc			2064

Asp Lys Gly Thr Lys Val Tyr Gly Asn Tyr Gln Ser Val Lys Gly Gly	
675 680 685	
aca ccc att atg aca cgc tta atg ata gtc ttt act aaa gcc att acg	2112
Thr Pro Ile Met Thr Arg Leu Met Ile Val Phe Thr Lys Ala Ile Thr	
690 695 700	
cct gat ggt gtg ata ata cct cta gca aac gct caa gca gca ggc atg	2160
Pro Asp Gly Val Ile Ile Pro Leu Ala Asn Ala Gln Ala Ala Gly Met	
705 710 715 720	
ttg ggt gaa gca ggg gta gat ggc tat gtg aat aat cac ttt atg aag	2208
Leu Gly Glu Ala Gly Val Asp Gly Tyr Val Asn Asn His Phe Met Lys	
725 730 735	
cgc ata ggc ttt gct gtg ata gca agc gtg gtt aat agc ttc ttg caa	2256
Arg Ile Gly Phe Ala Val Ile Ala Ser Val Val Asn Ser Phe Leu Gln	
740 745 750	
act gcg cct atc ata gct cta gat aaa ctc ata ggc ctt ggc aaa ggt	2304
Thr Ala Pro Ile Ile Ala Leu Asp Lys Leu Ile Gly Leu Gly Lys Gly	
755 760 765	
aga agt gaa agg aca cct gaa ttt aat tac gct ttg ggt caa gct atc	2352
Arg Ser Glu Arg Thr Pro Glu Phe Asn Tyr Ala Leu Gly Gln Ala Ile	
770 775 780	
aat ggt agc atg caa agt tca gct cag atg tct aat caa att cta ggg	2400
Asn Gly Ser Met Gln Ser Ser Ala Gln Met Ser Asn Gln Ile Leu Gly	
785 790 795 800	
caa ctg atg aat atc ccc cca agt ttt tac aaa aac gag ggc gat agt	2448
Gln Leu Met Asn Ile Pro Pro Ser Phe Tyr Lys Asn Glu Gly Asp Ser	
805 810 815	
att aag att ctc aca atg gac gat att gat ttt agc ggt gtg tat gat	2496
Ile Lys Ile Leu Thr Met Asp Asp Ile Asp Phe Ser Gly Val Tyr Asp	
820 825 830	
gtt aaa att act aac aaa tct gtg gta gat gaa att atc aaa caa agc	2544
Val Lys Ile Thr Asn Lys Ser Val Val Asp Glu Ile Ile Lys Gln Ser	
835 840 845	
acc aaa act ttg tct aga gaa cat gaa gaa atc acc aca agc ccc aaa	2592
Thr Lys Thr Leu Ser Arg Glu His Glu Glu Ile Thr Thr Ser Pro Lys	
850 855 860	
ggg ggc aat taattcaaga gaaaggataa aatatattca tggtactaaa	2641
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865	
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<212> PRT

<213> Helicobacter pylori

<400> 358

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Leu	Leu	Glu	Gln	Gln	Val	Leu	Asp	Cys	Leu	Lys	Asn	Ala	Lys	Thr	Glu
65					70					75					80
Ala	Asp	Lys	Lys	Arg	Cys	Val	Lys	Asp	Leu	Pro	Lys	Asp	Leu	Gln	Lys
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Lys	Val	Leu	Ala	Lys	Glu	Ser	Val	Lys	Ala	Tyr	Leu	Asp	Cys	Val	Ser
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Arg	Ala	Arg	Asn	Glu	Lys	Glu	Lys	Lys	Glu	Cys	Glu	Lys	Leu	Leu	Thr
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Pro	Glu	Ala	Lys	Lys	Leu	Leu	Glu	Glu	Ala	Lys	Glu	Ser	Leu	Lys	Ala
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Tyr	Lys	Asp	Cys	Leu	Ser	Gln	Ala	Arg	Asn	Glu	Glu	Glu	Arg	Arg	Ala
145					150					155					160
Cys	Glu	Lys	Leu	Leu	Thr	Pro	Glu	Ala	Arg	Lys	Leu	Leu	Glu	Gln	Glu
				165					170					175	
Val	Lys	Lys	Ser	Ile	Lys	Ala	Tyr	Leu	Asp	Cys	Val	Ser	Arg	Ala	Arg
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Asn	Glu	Lys	Glu	Lys	Lys	Glu	Cys	Glu	Lys	Leu	Leu	Thr	Pro	Glu	Ala
	195					200						205			
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	210					215					220				
Asn	Glu	Glu	Glu	Arg	Lys	Ala	Cys	Leu	Lys	Asn	Leu	Pro	Lys	Asp	Leu
225					230					235					240
Gln	Glu	Asn	Ile	Leu	Ala	Lys	Glu	Ser	Leu	Lys	Ala	Tyr	Lys	Asp	Cys
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Leu	Thr	Pro	Glu	Ala	Arg	Lys	Leu	Leu	Glu	Gln	Glu	Val	Lys	Lys	Ser
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Val	Lys	Ala	Tyr	Leu	Asp	Cys	Val	Ser	Arg	Ala	Arg	Asn	Glu	Lys	Glu
	290					295					300				
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305					310					315					320
Ala	Lys	Glu	Leu	Gln	Lys	Asp	Lys	Ala	Ile	Lys	Asp	Cys	Leu	Lys	
				325					330				335		
Asn	Ala	Asp	Pro	Asn	Asp	Arg	Ala	Ala	Ile	Met	Lys	Cys	Leu	Asp	Gly
			340					345					350		
Leu	Ser	Asp	Glu	Glu	Lys	Leu	Lys	Tyr	Leu	Gln	Glu	Ala	Arg	Glu	Lys
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Ala	Val	Ala	Asp	Cys	Leu	Ala	Met	Ala	Lys	Thr	Asp	Glu	Glu	Lys	Arg
	370					375					380				
Lys	Cys	Gln	Asn	Leu	Tyr	Ser	Asp	Leu	Ile	Gln	Glu	Ile	Gln	Asn	Lys
385					390					395					400
Arg	Thr	Gln	Asn	Lys	Gln	Asn	Gln	Leu	Ser	Lys	Thr	Glu	Arg	Leu	His

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Met Ala Val Tyr Leu Asp Phe Glu Asn His Ile Lys Glu Ile Gln
1 5 10 15
aat gaa att gaa tta gcc ctt att aga ggc gat gag gac gct aaa gaa 157
Asn Glu Ile Glu Leu Ala Leu Ile Arg Gly Asp Glu Asp Ala Lys Glu
20 25 30
atc tta gaa aaa aga ttg gat aag gag gtt aaa agc att tat tcc aat 205
Ile Leu Glu Lys Arg Leu Asp Lys Glu Val Lys Ser Ile Tyr Ser Asn
35 40 45
ctc act gat ttt caa aaa ctc caa tta gca aga cac cct gac aga ccc 253
Leu Thr Asp Phe Gln Lys Leu Gln Leu Ala Arg His Pro Asp Arg Pro
50 55 60
tac gct atg gat tac att gat ctc atc tta aaa gat aaa tat gaa gtc 301
Tyr Ala Met Asp Tyr Ile Asp Leu Ile Leu Lys Asp Lys Tyr Glu Val
65 70 75
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Phe Gly Asp Arg His Tyr Asn Asp Asp Lys Ala Ile Val Cys Phe Val
80 85 90 95
ggg aaa att gat aat gtc cca gtt gtg gtg atc gga gaa gaa aag ggc 397
Gly Lys Ile Asp Asn Val Pro Val Val Val Ile Gly Glu Glu Lys Gly
100 105 110
aga ggg act aaa aac aaa ctc tta aga aat ttt ggc atg cct aac cct 445
Arg Gly Thr Lys Asn Lys Leu Leu Arg Asn Phe Gly Met Pro Asn Pro
115 120 125
tgt ggc tat cgt aag gct ttg aaa atg gca aag ttt gct gaa aag ttt 493
Cys Gly Tyr Arg Lys Ala Leu Lys Met Ala Lys Phe Ala Glu Lys Phe
130 135 140
aat ttg cct att tta atg ctt gtg gat aca gcc ggg gcg tat ccg ggg 541
Asn Leu Pro Ile Leu Met Leu Val Asp Thr Ala Gly Ala Tyr Pro Gly

145	150	155	
att ggt gca gaa gaa agg ggg caa agt gaa gcg atc gct aaa aat ctc			589
Ile Gly Ala Glu Glu Arg Gly Gln Ser Glu Ala Ile Ala Lys Asn Leu			
160	165	170	175
caa gag ttc gcc tct tta aaa gtc cct act att tct gta att atc ggt			637
Gln Glu Phe Ala Ser Leu Lys Val Pro Thr Ile Ser Val Ile Ile Gly			
	180	185	190
gag ggg ggc agt ggt ggt gcg cta cga ttg cag tgg ctg aca aat tgg			685
Glu Gly Gly Ser Gly Gly Ala Leu Arg Leu Gln Trp Leu Thr Asn Trp			
	195	200	205
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Leu			

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<210> 360
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 <212> PRT
 <213> *Helicobacter pylori*

<400> 360																			
Met	Ala	Val	Tyr	Leu	Asp	Phe	Glu	Asn	His	Ile	Lys	Glu	Ile	Gln	Asn				
1				5					10					15					
Glu	Ile	Glu	Leu	Ala	Leu	Ile	Arg	Gly	Asp	Glu	Asp	Ala	Lys	Glu	Ile				
		20						25					30						
Leu	Glu	Lys	Arg	Leu	Asp	Lys	Glu	Val	Lys	Ser	Ile	Tyr	Ser	Asn	Leu				
		35					40					45							
Thr	Asp	Phe	Gln	Lys	Leu	Gln	Leu	Ala	Arg	His	Pro	Asp	Arg	Pro	Tyr				
	50				55					60									
Ala	Met	Asp	Tyr	Ile	Asp	Leu	Ile	Leu	Lys	Asp	Lys	Tyr	Glu	Val	Phe				
65					70					75					80				
Gly	Asp	Arg	His	Tyr	Asn	Asp	Asp	Lys	Ala	Ile	Val	Cys	Phe	Val	Gly				
			85					90					95						
Lys	Ile	Asp	Asn	Val	Pro	Val	Val	Val	Ile	Gly	Glu	Glu	Lys	Gly	Arg				
		100						105					110						
Gly	Thr	Lys	Asn	Lys	Leu	Leu	Arg	Asn	Phe	Gly	Met	Pro	Asn	Pro	Cys				
	115						120					125							
Gly	Tyr	Arg	Lys	Ala	Leu	Lys	Met	Ala	Lys	Phe	Ala	Glu	Lys	Phe	Asn				
	130					135					140								
Leu	Pro	Ile	Leu	Met	Leu	Val	Asp	Thr	Ala	Gly	Ala	Tyr	Pro	Gly	Ile				
145				150					155						160				
Gly	Ala	Glu	Glu	Arg	Gly	Gln	Ser	Glu	Ala	Ile	Ala	Lys	Asn	Leu	Gln				
			165						170					175					
Glu	Phe	Ala	Ser	Leu	Lys	Val	Pro	Thr	Ile	Ser	Val	Ile	Ile	Gly	Glu				
		180						185					190						
Gly	Gly	Ser	Gly	Gly	Ala	Leu	Arg	Leu	Gln	Trp	Leu	Thr	Asn	Trp	Leu				
		195					200						205						

<210> 361
 <211> 804
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (67)...(744)

<221> misc_feature
 <222> 738
 <223> n = A,T,C or G

<400> 361
 aaggcggttat gagtcaagac tataatagac tttaagaaaa atttaaaaaat taaggattat 60
 tgaata atg caa ttc aca ggg aaa aat gtt ctc att act ggg gct tct 108
 Met Gln Phe Thr Gly Lys Asn Val Leu Ile Thr Gly Ala Ser
 1 5 10
 aaa ggc att ggg gct gaa atc gcc aaa act ctc gct tct atg ggg ctg 156
 Lys Gly Ile Gly Ala Glu Ile Ala Lys Thr Leu Ala Ser Met Gly Leu
 15 20 25 30
 aaa gtt tgg atc aat tac cgc agt aat gct gaa gtg gct gac gct ttg 204
 Lys Val Trp Ile Asn Tyr Arg Ser Asn Ala Glu Val Ala Asp Ala Leu
 35 40 45
 aaa aat gag ctt gaa gaa aaa ggc tat aag gca gct gtc att aaa ttt 252
 Lys Asn Glu Leu Glu Glu Lys Gly Tyr Lys Ala Ala Val Ile Lys Phe
 50 55 60
 gat gcg gct tct gaa agc gat ttt att gaa gcg ata caa acc atc gtc 300
 Asp Ala Ala Ser Glu Ser Asp Phe Ile Glu Ala Ile Gln Thr Ile Val
 65 70 75
 caa agc gat ggg ggg ttg tct tac ttg gtg aat aac gcc ggt gtg gtg 348
 Gln Ser Asp Gly Gly Leu Ser Tyr Leu Val Asn Asn Ala Gly Val Val
 80 85 90
 cgc gat aaa tta gcg atc aaa atg aaa aca gaa gac ttt cac cat gtc 396
 Arg Asp Lys Leu Ala Ile Lys Met Lys Thr Glu Asp Phe His His Val
 95 100 105 110
 ata gac aat aac ctc act tca gcc ttt ata ggt tgc cga gag gct tta 444
 Ile Asp Asn Asn Leu Thr Ser Ala Phe Ile Gly Cys Arg Glu Ala Leu
 115 120 125
 aag gtg atg agc aag agt cgt ttt ggg agc gtg gtc aat gtc gct tct 492
 Lys Val Met Ser Lys Ser Arg Phe Gly Ser Val Val Asn Val Ala Ser
 130 135 140
 atc att ggt gaa aga ggc aat atg ggg cag aca aac tac tca gcg agt 540
 Ile Ile Gly Glu Arg Gly Asn Met Gly Gln Thr Asn Tyr Ser Ala Ser
 145 150 155

aag ggg gga atg att gca atg agc aag tcc ttt gct tat gag gga gct 588
 Lys Gly Gly Met Ile Ala Met Ser Lys Ser Phe Ala Tyr Glu Gly Ala
 160 165 170

tta agg aat att cgt ttc aac tct gta acg ccc ggt ttt ata gaa acc 636
 Leu Arg Asn Ile Arg Phe Asn Ser Val Thr Pro Gly Phe Ile Glu Thr
 175 180 185 190

gac atg aac gcc aat ttg aaa gac gaa ctc aaa gcg gat tat gtt aaa 684
 Asp Met Asn Ala Asn Leu Lys Asp Glu Leu Lys Ala Asp Tyr Val Lys
 195 200 205

aac att cct tta aac agg cta ggg tct gct aag gaa gtg gca gaa gcg 732
 Asn Ile Pro Leu Asn Arg Leu Gly Ser Ala Lys Glu Val Ala Glu Ala
 210 215 220

gta ggn ttc ttt tgagtgatca ctctagttac atcactggag agactctcaa 784
 Val Gly Phe Phe
 225

agtcaatggc gggctttata 804

<210> 362
 <211> 226
 <212> PRT
 <213> Helicobacter pylori

<220>
 <221> VARIANT
 <222> 224
 <223> Xaa = Any Amino Acid

<400> 362
 Met Gln Phe Thr Gly Lys Asn Val Leu Ile Thr Gly Ala Ser Lys Gly
 1 5 10 15
 Ile Gly Ala Glu Ile Ala Lys Thr Leu Ala Ser Met Gly Leu Lys Val
 20 25 30
 Trp Ile Asn Tyr Arg Ser Asn Ala Glu Val Ala Asp Ala Leu Lys Asn
 35 40 45
 Glu Leu Glu Glu Lys Gly Tyr Lys Ala Ala Val Ile Lys Phe Asp Ala
 50 55 60
 Ala Ser Glu Ser Asp Phe Ile Glu Ala Ile Gln Thr Ile Val Gln Ser
 65 70 75 80
 Asp Gly Gly Leu Ser Tyr Leu Val Asn Asn Ala Gly Val Val Arg Asp
 85 90 95
 Lys Leu Ala Ile Lys Met Lys Thr Glu Asp Phe His His Val Ile Asp
 100 105 110
 Asn Asn Leu Thr Ser Ala Phe Ile Gly Cys Arg Glu Ala Leu Lys Val
 115 120 125
 Met Ser Lys Ser Arg Phe Gly Ser Val Val Asn Val Ala Ser Ile Ile
 130 135 140
 Gly Glu Arg Gly Asn Met Gly Gln Thr Asn Tyr Ser Ala Ser Lys Gly
 145 150 155 160
 Gly Met Ile Ala Met Ser Lys Ser Phe Ala Tyr Glu Gly Ala Leu Arg
 165 170 175

Asn Ile Arg Phe Asn Ser Val Thr Pro Gly Phe Ile Glu Thr Asp Met
 180 185 190
 Asn Ala Asn Leu Lys Asp Glu Leu Lys Ala Asp Tyr Val Lys Asn Ile
 195 200 205
 Pro Leu Asn Arg Leu Gly Ser Ala Lys Glu Val Ala Glu Ala Val Xaa
 210 215 220
 Phe Phe
 225

<210> 363
 <211> 373
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (103)...(312)

<400> 363
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 ttaagcaatg attttaagct atggaaaaga ggtgatagca gt atg cca ggg att 114
 Met Pro Gly Ile
 1

aag gtt aga gaa ggc gat gcg ttt gat gaa gct tat agg aga ttc aaa 162
 Lys Val Arg Glu Gly Asp Ala Phe Asp Glu Ala Tyr Arg Arg Phe Lys
 5 10 15 20

aag caa acc gat cgc aat tta gtg gta aca gaa tgc cgt gct aga agg 210
 Lys Gln Thr Asp Arg Asn Leu Val Val Thr Glu Cys Arg Ala Arg Arg
 25 30 35

ttc ttt gag tct aag act gaa aaa cgc aaa aaa caa aaa atc agc gct 258
 Phe Phe Glu Ser Lys Thr Glu Lys Arg Lys Lys Gln Lys Ile Ser Ala
 40 45 50

aaa aag aag gtt ttg aag cgt ctt tat atg tta agg cgt tat gag tca 306
 Lys Lys Lys Val Leu Lys Arg Leu Tyr Met Leu Arg Arg Tyr Glu Ser
 55 60 65

aga cta taatagactt taagaaaaat ttaaaaaatta aggattattg aataatgcaa 362
 Arg Leu
 70

ttcacaggga a 373

<210> 364
 <211> 70
 <212> PRT
 <213> Helicobacter pylori

<400> 364
 Met Pro Gly Ile Lys Val Arg Glu Gly Asp Ala Phe Asp Glu Ala Tyr
 1 5 10 15

Arg	Arg	Phe	Lys	Lys	Gln	Thr	Asp	Arg	Asn	Leu	Val	Val	Thr	Glu	Cys
			20					25					30		
Arg	Ala	Arg	Arg	Phe	Phe	Glu	Ser	Lys	Thr	Glu	Lys	Arg	Lys	Lys	Gln
		35					40				45				
Lys	Ile	Ser	Ala	Lys	Lys	Lys	Val	Leu	Lys	Arg	Leu	Tyr	Met	Leu	Arg
	50				55						60				
Arg	Tyr	Glu	Ser	Arg	Leu										
65					70										

<210> 365
 <211> 23
 <212> DNA
 <213> Helicobacter pylori

<400> 365
 ccgaattcgg ttataaagcc cct 23

<210> 366
 <211> 24
 <212> DNA
 <213> Helicobacter pylori

<400> 366
 ccgctcgagt taaggctgat ttaa 24

<210> 367
 <211> 32
 <212> DNA
 <213> Helicobacter pylori

<400> 367
 cgcggatccg aggaaatagc atgttaataa cc 32

<210> 368
 <211> 33
 <212> DNA
 <213> Helicobacter pylori

<400> 368
 ccgctcgagt cactgcttgc atgacttatt cca 33